

This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

Usage guidelines

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

+ *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.

+ *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.

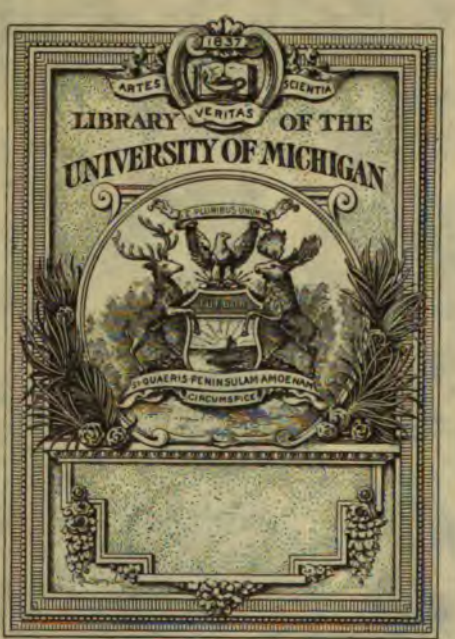
+ *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.

+ *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at `http://books.google.com/`

B 433557



THE GIFT OF
Estate of
W. H. Bonner.

3
96
N53

SIXTH

ANNUAL REPORT

OF THE

AMERICAN INSTITUTE,

OF THE CITY OF NEW-YORK.

Made to the Legislature, March 25, 1848.

ALBANY:
CHARLES VAN BENTHUYSEN, PUBLIC PRINTER.

1848.

O 15 N 10 MCP

OFFICERS OF THE AMERICAN INSTITUTE, 1847, '48.

TRUSTEES.

MAHLON DICKERSON, *President.*
SHEPHERD KNAPP, } *Vice Presidents.*
JOHN CAMPBELL, }
JAMES J. MAPES, }
T. B. WAKEMAN, *Cor. Secretary and Sup'g Agent.*
HENRY MEIGS, *Recording Secretary.*
EDWARD T. BACKHOUSE, *Treasurer.*

MANAGERS OF THE TWENTIETH ANNUAL FAIR.

Adoniram Chandler,
James Van Norden,
Heman W. Childs,
William Hall,
James R. Smith,
Martin E. Thompson,
Isaac Fryer,
Robert Lovett,
Thomas B. Stillman,
C. C. Haven,
Thomas W. Harvey,
George Gifford,
Joseph Torrey,
James R. Walters,
Samuel H. Maynard,
H. C. Westervelt,
William Dodge,
John Clowes,
W. H. Calkins,
William C. Arthur,
Benjamin Aycrigg,
F. P. Schoals,
E. T. Backhouse,
George C. Mann,
T. B. Wakeman, *Ex-Officio.*

BOARD OF AGRICULTURE.

Jeremiah Johnson, Brooklyn, L. I.,
Philip Schuyler, New-York,
Nicholas Wyckoff, Bushwick, L. I.,
R. T. Underhill, Croton Point, N. Y.,
Charles Henry Hall, Harlem, N. Y.,
Thomas Bridgman, New-York,
William J. Townsend, Astoria, L. I.,
James De Peyster, New-York,
Charles Bathgate, Morrisania,
Thomas Bell, Morrisania,
J. H. Coggeshall, Lynn, Mass.,
William A. Crocker, Taunton, Mass.,
Henry A. Field, New-York,
R. S. Livingston, Poughkeepsie, N. Y.,
John P. Veeder, New-York,
E. M. Dodd, Orange, N. J.,
Edward Clark, Brooklyn, L. I.,
J. Lawrence Smith, Smithtown, L. I.,
Roswell L. Colt, Paterson, N. J.,
Samuel Walker, Boston, Mass.,
Mortimer L. Brown, Astoria, L. I.,
Thomas Addis Emmet, New-York.

FACULTY.

James Renwick, Professor of Mechanical Philosophy.
James R. Chilton, " Analytical Chemistry.
James J. Mapes, " Natural Philosophy and Chemistry, as applied to the Useful Arts.
P. P. Duggan, " The Arts of Design, as applied to the Useful Arts.
Gabriel Furman, " Geology and History.
Henry Meigs, " Languages.

COMMITTEE ON ARTS AND SCIENCES.

James Renwick,
Thomas B. Stillman,
James R. Chilton,
Thomas W. Harvey,
Horatio Allen,
Charles W. Copeland,
James J. Mapes,
P. P. Duggan,
C. L. Elliot,
Neziah Bliss,
J. L. Kinsley,
T. S. Cummings.

193359

STATE OF NEW-YORK.

No. 216.

IN ASSEMBLY,

March 25, 1848.

ANNUAL REPORT OF THE AMERICAN INSTITUTE.

NEW-YORK, *March* 23*d*, 1848.

To the Honorable

AMOS K. HADLEY,

Speaker of the House of Assembly, New-York.

SIR—I herewith transmit the Annual Report of the American Institute of the city of New-York for the year 1847.

Respectfully, your obedient servant,

T. B. WAKEMAN, *Secretary.*

SIXTH ANNUAL REPORT

OF THE TRUSTEES OF THE AMERICAN INSTITUTE OF THE CITY OF NEW-YORK, MADE MARCH, 1848.

The annexed documents and papers will show that this Institution, from year to year, is rapidly increasing in prosperity. As the accounts of the year are ordinarily first inquired after as a convenient and ready measure of the success or decline of our public institutions, we have presented those of the last year more extended in the details than is customary with other incorporated associations, required to report to the Legislature.

The frequent injudicious if not fraudulent application of legislative grants, has created a sensitive and laudable watchfulness in the public mind to know with certainty that all the monies appropriated by the State for public beneficial purposes, are faithfully applied to the legitimate objects of the appropriation. This sensitiveness of the public mind, is a continually operating wholesome check on the recipients of State bounty.

With a view to inspire the confidence of the members, and all others interested, the books of accounts of all the receipts and expenditures of the American Institute are kept at its repository, ready to be opened to them at all times, with the vouchers filed, showing the receipts of all moneys, and the sources from which derived, and also of every dollar expended, and for what purpose expended. Every dollar received by the Institute, according to the by-laws, must be paid over to the treasurer. It cannot be drawn, except by order of the superintending agent, and before his order can be accepted, he must show that the object for which he proposes to apply the money has been approved, and an appropriation made by a general meeting of the members, duly

notified, and also that the account has been examined and certified as correct by the finance committee of the Institute—men chosen for their knowledge of accounts, probity, and independent circumstances, at the annual election of the officers of the Institute.

The following account embraces the financial affairs of the Institute for the year.

RECEIPTS AND EXPENDITURES.

The receipts and expenditures of the American Institute of the city of New-York, from February, 1847, to February, 1848, have been as follows:

Receipts.

To cash received from sales of tickets at Castle Garden,	$14,571 75	
Less counterfeit money,	12 50	
		$14,559 25
To cash received at cattle show,		195 06
do rents of stands in selling saloon,		190 00
do sales of lumber used at the exhibitions,		280 96
do from Hon. M. Van Schaick, for silk premiums, (part of $1000),		100 00
do for special premiums,		50 00
do contributed by members,		1,840 00
do interest on special deposit, &c.,		254 00
do interest on city stock, $5000, at 6 per cent, 3 months,		75 00
do interest on city stock, $7000, at 6 per cent, 9 months,		315 00
do Treasurer State of New-York, under act of May 5, 1841,		950 00
		$18,809 27
Balance on hand at the date of the last report, February, 1847.		
In city stock, at 6 per cent,	$7,000 00	
In hands of treasurer,	2,249 22	
		9,249 22
		$28,058 49

Expenditures.

Payments on account of the 20th Annual Fair of the American Institute.

By Printing and Publication Com.		
Printing circulars, invitations, tickets, blanks, hand-bills, badges, &c.,	$433 31	
do addresses,	176 95	
do list of premiums,	65 58	
Newspaper advertisements, flags for stages, bill-posting, reporting, stationery, &c.,	402 85	
		$1,078 69
By Committee of Arrangements.		
Lumber, carpenter's work, and ironmongery at Castle Garden and Cattle Show,	$998 79	
Steam power, fuel, &c.,	654 61	
Lighting, gas, oil, camphine, &c.,	545 63	
Clerk hire, police, day and night watch, assistants, and laborers,	871 61	
Horticultural department expenses,	344 12	
Glazing cases, muslin for tables, cartage and freight,	73 41	
Large flag and transparencies,	19 12	
Petty expenditures,	94 55	
		3,601 84
By Finance Committee.		
Ticket sellers, receivers and door-keepers,		218 00
By Committee on Room and Music for Anniversary Address.		
Rent of Tabernacle,	$75 00	
Music, &c.,	70 00	
		145 00
By Committee of Refreshments.		
Dinners for managers, while detailed on duty, and for guests from a distance,	$348 37	
Refreshments for bands from Governor's Island, &c., whose services were gratuitous,	64 04	
Carried forward,	$	$

Brought forward,	$	$
Refreshments for judges and committees at Cattle Show,	24 62	
		$437 03
Miscellaneous Bills.		
Rent of Castle Garden,		1,275 00
Rent of room for convention of farmers, gardeners and silk culturists,		20 00
Expenses of orators, &c.,		77 41
Fireworks,		173 30
By Premium Committee.		
Gold and silver for medals,	$1,167 35	
Cutting new dies for do.,	125 00	
Medal cases,	63 25	
Silver cups, plate, &c.,	378 71	
Engraving,	187 50	
Cash premiums,	338 25	
Books for premiums,	183 87	
Printing and filling up diplomas,	148 85	
		2,592 78
		$9,619 05

On account of the Repository and Library of the American Institute.

Salary of superintending agent,	$1,250 00
Salary of recording secretary,	200 00
Salary of clerk,	700 00
Salary of assistant librarian and messenger,	315 00
Insurance on library and fixtures,	35 00
Books purchased for library,	268 24
Binding books,	38 38
Freight of Transactions, &c.,	14 38
Newspaper advertisements,	17 50
Newspaper subscriptions,	57 88
Stationery,	6 00
Furniture and repairs,	24 00
Stove and pipe,	43 06
Printing addresses, circulars, &c.,	124 60
Fuel,	18 00
Carried forward,	$

Brought forward,		$
Croton water fixtures,		16 30
Storage of machinery,		14 40
Agent's expenses at Albany,		105 79
Agricultural school expenses,		23 84
Farmers' club expenses,		94 09
Preparing report of convention of farmers, gardeners, and silk culturists, 1845,		25 00
Petty cash expenses—postages, cleaning, subscriptions to small papers, labor, &c.,		257 47
		$3,648 93
Premium for ventilation,		100 00
		$3,748 93

RECAPITULATION.

Receipts.

To cash received from January 20, 1847, to January 20, 1848,	$17,859 27
To cash received from treasurer of State of New-York,	950 00
	$18,809 27
Balance on hand at the date of the last report, February 1, 1847,	9,249 22
	$28,058 49

Expenditures.

By disbursements, claims against the 19th Annual Fair, 1846,	$365 14	
By expense 20th Fair, 1847,	9,619 05	
By expenses repository and library,	3,748 93	
		13,733 12
Balance on hand,		$14,325 37

Invested in stocks of the city of New-York, 6 per cents,	$7,000 00
Invested at interest in bank,	5,000 00
In hands of the treasurer,	2,325 37
	$14,325 37

STATEMENT

Of the Receipts and Expenditures of the American Institute of the city of New-York, from 1839 to 1847, for Agriculture, Commerce, Manufactures and the Arts.

	Receipts.					*Expenditures.*		
	Repository, year ending April.	State of N. York.		Annual Fairs.	Total.	Repository, year ending April.	Annual Fairs.	Total.
1840	$1,692 82		12th 1839	$8,831 41	$10,524 23	$3,472 91	$7,631 41	$11,104 32
1841	1,993 86		13th 1840	6,581 25	8,575 11	3,426 25	5,128 30	8,554 55
1842	1,622 50	$950	14th 1841	7,050 00	9,622 50	4,239 00	5,571 31	9,810 31
1843	1,339 64	950	15th 1842	6,741 75	9,031 39	2,889 83	5,825 75	8,715 58
1844	1,259 00	950	16th 1843	8,808 80	11,017 80	4,011 32	6,247 52	10,258 84
1845	1,590 65	950	17th 1844	10,249 71	12,790 36	3,542 35	7,484 63	11,026 98
1846	1,883 50	950	18th 1845	12,600 43	15,433 93	4,465 21	8,683 49	13,148 70
1847	2,095 50	950	19th 1846	14,312 00	17,357 50	4,253 53	10,225 25	14,478 78
Feb. 1848	2,255 00	950	20th 1847	15,275 27	18,480 27	3,748 93	9,619 06	13,367 99
Total,	$15,732 47	$6,650		$90,450 62	$112,833 09	$31,049 33	$66,416 72	$100,466 05

Receipts of fair, 1841,	$7,050 00	
" " 1842,	6,741 75	
" " 1843,	8,808 80	
Average receipts of the 3 years,		$7,533 51
Receipts of fair, 1844,	$10,249 71	
" " 1845,	12,600 43	
" " 1846,	14,312 00	
Average receipts of the 3 years,		12,387 38
Receipts of fair, 1847,		15,275 27
Expenditures of Fair, 1841,	$5,571 31	
" " 1842,	5,825 75	
" " 1843,	6,247 52	
Average expenditures of the 3 years,		5,881 52
Expenditures of fair, 1844,	$7,484 63	
" " 1845,	8,683 49	
" " 1846,	10,225 25	
Average expenditures of the 3 years,		8,797 79
Expenditure of fair, 1847,		9,619 06

By the foregoing statement, it appears that the receipts of the last fair have more than doubled the average of those of 1841, '42 and '43, and are ¼ more than the average of 1844, '45 and '46.

The expenditures have not increased in the same ratio, while the premiums have doubled, and we see no reason why the receipts may not continue to increase in about an equal ratio for the future, as our population, wealth and the influence of the Institute extend.

In addition to the receipts of the last fair, one day's proceeds of the sale of tickets, with contributions, amounting in the whole to one thousand dollars, were also received, which were applied as a donation to the young girl who had the misfortune to loose a part of her hand in one of the machines, described in the manager's report, hoping it might afford some slight alleviation for her affliction.

The whole receipts of the Institute, from February, 1846, to February, 1847, were $14,312, while the receipts from February, 1847, to February, 1848, including the $1000 bestowed on the unfortunate girl, which has not gone into the general account, was $19,809.27,

showing an increase in the receipts of the year, of over five thousand dollars.

When it is considered that four out of five of the entries at our fairs are free, this being the estimate, arising from the large number of members and exhibitors with their families, also delegates from an immense number of societies, literary and scientific, with distinguished individuals from all parts of the country who are admitted free, and the price of admission is only 25 cents, it shows that the public interest taken in this institution has no parallel in our country.

For about three weeks the place of exhibition is the centre of attraction for this city, the neighboring cities, and throughout our country, to distances almost incredible; crowds are continually flocking here to witness the grand display, which embraces the products of all occupations and the whole industrial community.

We could present many other evidences than those of its money results, of the advancing prosperity of the Institute in the operations of the last year. Three hundred and five volumes have been added to our library, besides a great number of unbound documents, pamphlets, charts, maps, &c. More than one-half of these are voluntary contributions, a great part of which are eminently valuable works on agriculture, presented in accordance with Vattemare's celebrated plan of international exchanges; the donors of which are the Royal Society of Agriculture, the Minister of Commerce and Agriculture, The Society for the Encouragement of National Industry, Baron Schauenberg, &c. To promote the laudable objects of these exchanges, the following circular has been issued:

VATTEMARE INTERNATIONAL EXCHANGES.

New-York, December 6, 1847.

The American Institute, in continuation of the system of exchanges so advantageously commenced, and now conducted by the Hon. Alexander Vattemare, of Paris, invite contributions of American works, in print, (or in manuscript prepared for the printer,) on subjects connected with the objects of the Institute, viz: "Agriculture, commerce, manufactures and the arts." Since a separate and more extensive arrangement is maturing, for the collection of machinery, models, plans and specimens of the useful arts, the present appeal is more especially made for literary productions, on the above subjects,

and also for agricultural and horticultural productions: such as roots, (especially "potatoes,") seeds, (especially of forest trees,) grains, nuts, plants, wood, flowers, leaves, and the objects belonging to these branches, that will be interesting in showing to Europe the productions of this country, and useful in transferring the best species for their use, in exchange for other horticultural and agricultural works and specimens returned to this country for our use.

That there may be no misapprehension, the contributors are informed that the European agency does not receive presents except through public institutions, as an offering of patriotism, that returns may be made to the same institutions, as the representatives of the whole, and for the good of the whole.

We invite all who feel an interest in the subject, to call at the repository, examine the books presented by Mr. Vattemare, amounting to 140 volumes, and receive any other desired information concerning these exchanges.

T. B. WAKEMAN, HENRY MEIGS,
WILLIAM DODGE, H. W. CHILDS,
BENJAMIN AYCRIGG, JOHN CAMPBELL,
Committee.

A collection of books will soon be transmitted from the Institute to France, in conformity to the plan of Mr. Vattemare.

The number of machines, models and specimens, in the room appropriated for daily exhibition, is 245—not one-fifth part of what would have been received if there had been sufficient room.

Correspondence has increased; the number of corresponding members admitted within the last year is thirty-two, all of whom reside in different parts of the country, and out of the city, and will by their communications add much to our constantly growing fund of information, by letters, &c., from abroad.

The premiums bestowed on meritorious competitors have greatly multiplied. Whole number awarded, consisting of gold and silver medals, silver cups, diplomas, and books:

In	1835, were	447.
"	1840, "	421.
"	1847, "	912.

The Farmers' Club has been continued since the last report, with unabating interest. The receipt of rare and choice seeds for distribution has increased, and many thousand grafts are already promised for the coming grafting season.

From a comparatively small beginning, the operations of the Institute have constantly been expanding for twenty years. All its measures and movements have been steadily directed to utility and improvement. How much of our unprecedented success in agriculture and the arts, may be attributed to these powerfully exciting means, continued unremittingly for twenty years, we shall not attempt to estimate—their measure we leave to the judgment of an impartial community. If what has been done thus far meets the approbation of the Legislature, so as to render the conductors worthy of its confidence, then we most respectfully ask the members to examine our position and plans, and the necessity for their help to carry out these objects, recommended by them in our charter—plans pregnant, as we believe, with vastly beneficial consequences to our State and country.

We require for the benefit of our farmers, gardeners, and our artists, whose interest our charter enjoins us to promote, not only in this State, but over the whole United States, a large hall, for the daily exhibition of machines, models, and specimens of genius and art, in all the varieties of improvement; particularly the new machines, tools and implements of husbandry, for the free examination of our fellow-citizens, both of the city and country—with steam power connected, to exhibit the practical operation of all the new labor-saving machines of agriculture and the arts—with competent professors to lecture upon them and point out their uses, and illustrate their principles, operations, and objects. This should be open to visitors at all times, free of expense, in order to be most extensively useful, especially to the farmer, who from his habits of economy is liable to be deterred from the benefits of information by a small sum, although from his insulated position and mode of living he may most need the benefits of the knowledge to be obtained from such an establishment.

We have a small room provided by the bounty of our city corporation, but it does not include one-fifth of the space requisite. The articles cannot conveniently be seen or handled. As a place of recreation, apart from utility, almost every man visiting New-York from the country, would be gratified to spend an hour, when the

contemplated enlargement is completed, and he would hardly fail to see something which would be useful to him, his neighborhood, or perhaps his whole state. This magazine of improvements, brought from all parts of our country, could never fail at any season to present something that would be available to any visitor to our great city.

At the close of our fairs such a room might be filled at once, because it would be the interest of the inventor and fabricator to give publicity to their products, whether remarkable for invention or skilful workmanship.

To complete the plan of the Institute, our establishment for teaching, both practically and scientifically, by means of an agricultural college or school, and an experimental farm, is deemed essential.

It has from its commencement been the object of the conductors of this Institute, to awaken the country to the importance of agriculture. In numbers it is admitted the farmers compose about four-fifths of our whole population, and their products supply most of the materials of our clothing, as well as the means of sustaining life to all.

Washington, the father of his country, was a practical farmer. We will quote his own words, uttered by him at the session which closed his official labors, immediately preceding his retirement to his farm at Mount Vernon.

Extract from General Washington's speech on the opening of Congress, 5th, Dec., 1796:

"It will not be doubted, that with reference either to individual or national welfare, agriculture is of primary importance. In proportion as nations advance in population and other circumstances of maturity, this truth becomes more apparent, and renders the cultivation of the soil more and more an object of public patronage. Institutions for promoting it grow up, supported by the public purse; and to what object can it be dedicated with greater propriety? Among the means which have been employed to this end, none have been attended with greater success than the establishment of boards, composed of proper characters, charged with collecting and diffusing information, and enabled by premiums, and small pecuniary aid, to encourage and assist a spirit of discovery and improvement.

"This species of establishment contributes doubly to the increase of improvement, by stimulating to enterprise and experiment, and by drawing to a common centre, the results everywhere of individual skill and observation, and spreading them thence over the whole nation. Experience accordingly has shown, that they are very cheap instruments of immense national benefits."

Notwithstanding the all-pervading veneration for this great man, and the power of his opinions over the whole civilized world, more than half a century has elapsed, and not a movement has been made to carry into effect this most wholesome recommendation. We believe more has been written and published by the American Institute to call public attention to his advice, than all that has been written and published within that period beside. Until recently an apathy has rested on the farmers, from which it seemed impossible to rouse them, but the results of improved agriculture, within a few years, in portions of Europe, under the guidance of science and practical skill, has opened the eyes of many reflecting agriculturists, and in fact of all classes, and the press has not withheld its formidable power. Experience has satisfied incredulity, that knowledge is as requisite for the husbandman as for any other occupation, and that its principles and practice should both be taught in seminaries of instruction, on ground devoted to the purpose.

The most cheering accounts of the benefits of such teachings reach us every day. In our country the spirit of improvement is most strikingly exemplified in the machines and implements devised to relieve the cultivators of the ground from the drudgeries to which they have heretofore been subjected.

It is our deliberate opinion, that at this time a college or school, and an experimental farm, with suitable instructors, practical and scientific, are imperiously called for. The reasons for which are summarily expressed in the following extract from our petition to your honorable body, which has been signed by more than nineteen out of twenty of the thousands to whom it has been presented, showing a unanimity of sentiment that makes it an exception to almost any other subject. Hundreds of anxious parents are inquiring, Will your petition be passed over another year? Why the delay? The Legislature is now drawing near its close. Has the bill passed either House? When will it be taken up?

Reasons for the Establishment of an Agricultural School and Experimental Farm, near the city of New-York.

First—Because agriculture is the most important and extensive employment of the people of this country, employing as it does four-fifths of the whole population, sustaining all other occupations, and forming the basis of public and private wealth and prosperity.

Second—Because it is for the greatest interest of the country to bring agriculture to the highest possible state of perfection.

Third—Because the cultivation of the earth, and all the processes of agriculture, involve the use of natural laws, and, therefore, to render it most successful, requires a knowledge of natural science in all its departments.

Fourth—Because attempts to cultivate the soil, without the aid of such knowledge, lead to a waste and loss of much time and labor, by counteracting natural laws instead of co-operating with them.

Fifth—Because improvements in the art of agriculture, have, heretofore, been much neglected, and have not received that public and private attention which its importance demands, and which has been bestowed upon other arts and branches of industry.

Sixth—Because improvements in agriculture require, not only a knowledge of the sciences, but also a practical application of their principles, to all the various modes of working and treating soils; and because, in consequence of the constant advance and disclosures of science, numerous, difficult, and time-consuming experiments therein, have become necessary, and which can be satisfactorily tried, only when ample preparation is made for them.

Seventh—Because farmers, generally, have neither time, means, nor qualification sufficient to conduct such experiments, and that the same, if made at all, must be by a combined effort, and can be more successfully carried out by the institution proposed than in any other way.

Eighth—Because in an institution, like the one proposed, might be taught, to the best advantage, everything calculated to render the business of farming more flourishing, prosperous and productive; such as enriching and draining soils, preserving and restoring their fertility, what manures are best adapted to the different kinds of soil,

how they take effect upon them, how they leach and become exhausted, and under what circumstances and conditions they should be applied; also, chemistry, botany, mineralogy, geology, grafting, budding, mensuration, surveying, zoology, and all other sciences having any connection with agriculture and their application thereto. Also the use of all new inventions, improvements and machinery, also a knowledge of all kinds of stock, their breeding, uses, diseases, and the remedies therefor, and the best modes of keeping them in good health, also a knowledge of all insects, their uses and injuries, and the best means of preventing the latter.

Ninth—Because the institution proposed is a new enterprise, and every new thing requires the most favorable circumstances, at first, to show fairly what it really is, and can do, and to secure for it the confidence and favor of the people; and because this Institution is intended as a pioneer enterprise, to show the importance and benefit of such instruction, and to finally produce other institutions like it in different parts of the State and country, and it ought therefore to be where most will see its works.

Tenth—Because the vicinity of the city of New-York is a more favorable location for the first institution of this kind, and would combine more advantages to assure its success, than any other place in the State. There, suitable land, in every variety, can be obtained as cheap, considering its contiguity to the great markets of the metropolis, as in any other part of the State; there the farm and school would be visited by more people than anywhere else, and for that reason among others, the number of students and the amount of donations obtained would be much greater there than in any other place; there it could have the voluntary aid and services of many experienced professors of science, connected with the colleges and other institutions of the city; there could be obtained the use of extensive libraries and all kinds of apparatus, and particularly those of the American Institute; there, with the greatest possible facility, it could be furnished with all kinds of plants, seeds and specimens from all parts of the world, and with equal facility distribute them among the farmers of this State; there it could be conveniently supplied with materials and all varieties of manures for making experiments; there it would be accessible to the multitudes who visit the Great Fairs of the American Institute from all parts of the country, and there greater publicity through the numerous public journals of the city, would be given to the experiments and operations of the institution than could be secured in any other place.

Therefore, considering the aid which the American Institute can afford, both in money and knowledge, the large number of farmers belonging to it, and the deep interest it takes in agriculture, we do not hesitate to give our opinion, that the location prayed for presents advantages paramount to all others."

The advantages of proximity to New-York for learning which are the best machines and implements applicable to various purposes on the farm, are evident. No inconsiderable portion of its profits depends upon the use of the best kind. The farmer is continually exposed to deception and loss from highly recommended machines, which on trial prove defective and are abandoned.

At the Great Fair the collection of machines, tools and implements is immense, with all the conveniences for testing, in high perfection, provided. The expense incurred the last year for steam power alone, the accounts state to have been $654.61. Our intelligent committee say that there were exhibited more than 140 new inventions or improvements on old ones: more than was ever brought together in this country before. What an opportunity for the student to learn with his professors and the ingenious originators to explain their exact uses and merits, and to discriminate between the different constructions for the same purpose. The best is what he seeks for. These again may be tested on the farm without risking purchase until their defects or merits are ascertained. The daily exhibition room of the Institute, when sufficient space shall be furnished, may be resorted to every day, and every new invention taken to the experimental farm and tested at once.

The paramount difficulty is in obtaining the means for commencing the establishment. The failure of individual efforts confirms this. The establishment of such an institution by this state was thirty years ago recommended by some of our wisest statesmen, and repeated applications to the legislature have since been made. The state has an immense educational fund, a small portion of which, a mere fraction, with the contributions of public spirited individuals—and there are many such, impressed with the value of the proposed institution—we could add to these contributions a portion of the accumulations of the Institute already made, amounting to $12,000, that could be spared, which would in our opinion insure the undertaking. Once under way, it could hardly fail for want of income. The farm might be made a source of continued profit, if 30 acres for one year from the Bloomingdale Asylum, and also the farm of R. & J. Cooper,

as stated within, show the result of good cultivation, near our city markets. The raising of the best seeds in large quantities would be a public benefit, and as shown within, is in other countries attended with great success and profit. A large nursery might also be a source of profit. A portion of the future annual nett gains which could be spared, in justice to the arts—the whole of which amounted last year to five thousand dollars—would no doubt be cheerfully applied for this purpose, if the endowment of the state authorises commencing. The accounts for a series of years show that the annual income is more likely to increase than diminish. The tuition of students might, without extravagance, be estimated sufficient to cover the salaries of professors as soon as it is fairly in progress. If required, aid by voluntary contributions from wealthy individuals in our great city might, we think, always be relied on. So desirable an institution near our great city would not be suffered to languish for want of means.

We respectfully ask every friend of improvement to reflect on the benefits,

1st. Of a daily extensive exhibition of all the useful fabrications of invention, skill, and labor, in one spacious room in our great emporium, open every day to our enterprising citizens free from expense; and,

2dly. In its vicinity, an institute of instruction, for our youths, scientifically and practically, in the most healthy and useful of all occupations, and if they approve, we solicit their co-operation in obtaining a comparatively small endowment from the state, which, with the means that may be obtained from public spirited individuals, united with those of this Institute, will not fail, in our opinion, to accomplish all which has been proposed.

Respectfully submittted.

SHEPHERD KNAPP, *President, pro tem.*

H. MEIGS, *Recording Secretary.*
T. B. WAKEMAN, *Corresponding Secretary.*

New-York, March 1, 1848.

REPORT OF THE BOARD OF MANAGERS.

OF THE TWENTIETH ANNUAL FAIR.

The Board of Managers commenced their labor preparatory to the 20th exhibition in the early part of June. Their organization and division into subcommittees was first completed, and from that time to the present the gentlemen composing the board have devoted their time with zeal and attention. When the immense amount of labor necessary to be performed in a very short period of time is taken into view, exemption from errors can hardly be expected; we indulge a hope, however, that the results will meet the approbation of the Institute.

The fair was opened to the public at Castle Garden on the 6th day of October, and closed on the 23d. The exhibition consisted of productions from 2,194 contributors in almost every department of manufactures, the mechanic arts and horticultural production. The whole consisting of more than 20,000 articles, were arranged by the labor and under the directions of the members of the Board in the best possible manner that the time would permit, which, from the daily demonstration of visitors, we are encouraged to believe met the public approbation. The horticultural department was entirely under the management of Thomas Bridgman, Esq., who merits our warmest thanks for his assiduity and taste. For a particular and interesting account of this department we refer with pleasure to his report hereto appended.

It is gratifying to be able to say, that in various branches of important manufactures, and also in the production of the mechanic arts, improvements and delicacy of finish, beyond the exhibition of last year, were strikingly visible.

It would be a curious and instructive spectacle could we arrange the fair of 1828 by the fair of 1847, as illustrative of the great

utility resulting from these annual exhibitions. Emulation constantly excited, urging on to increased exertion, has resulted in the production of fabrics and works of handicraft which cannot be surpassed any where, and which, in a general point of view, will only be excelled by the continued application of the same stimulating process. Here the artizan brings the result of his labor and ingenuity to the immediate view or critical examination of 2 to 300,000 of his fellow citizens, and should he meet their approval, the acme of his aspirations is at once obtained; whereas, in the absence of these exhibitions, he might pass a life of toil, and for want of means, which would be large, to give him a tithe of the notoriety here obtained, sink prematurely to rest unknown and unrequited. The value of these fairs, however, is by no means to be measured by benefits conferred on individual genius, or proficiency in production in any department. Viewed as a whole, the benefit conferred on the metropolis, by attracting to it thousands upon tens of thousands annually to view the exhibition and make their purchases of necessary articles, constitutes an important feature in the picture. In the absence of this they would be attracted elsewhere. The facility afforded to the purchaser for selecting the best article, or the most improved machine is by no means of small moment. The opportunity afforded to the young adventurer in artizan production or invention to measure his own strength and ability with his seniors cannot be lost sight of. But above all, the thrilling emotion of patriotic pride which swells our bosoms as we survey this vast assemblage of the representatives of man's labor and ingenuity, this perfect jubilee of the arts, and see and know that all these are the work of our own citizens cannot be otherwise than attended with the most lasting and beneficial effects.

The Cattle Show, another branch of the exhibition was opened to the public on ground situated at the junction of Broadway and 23rd Street, on the 13th of October, and the exhibition continued two days. The number of exhibitors was 176, presenting to the public the following:

43 Horses,	11 pairs Working Cattle,	6 Mules,
94 head of Cattle,	54 Sheep,	53 Pigs.
68 Fowls.	3 Shepherd Dogs.	

The management of this department was confided to an Agricultural Board, elected by the Institute, who placed at their head our excellent friend and co-laborer, Philip Schuyler, Esq., to whose report, for a more particular and detailed account, we refer with pleasure.

The testing of Plows and Spading Match, another department of the Fair, was announced to take place at Hempstead, L. I., on the 8th of October, during the exhibition of the Queen's County Agricultural Society. The plows and other implements were forwarded the day previous; many persons also repaired to the place thus early to secure accommodations, anticipating a day of much instruction and amusement, such as this part of our exhibition rarely fails to afford. Unfortunately the day proved inauspicious; the rain descending throughout in torrents, rendered a postponement necessary. There was subsequently a testing of plows, &c., at Harlem, but owing to the unfavorableness of the weather, it was not as satisfactory as could have been desired.

The Premium Committee, under the direction of our friend Robert Lovett, Esq., report that they have received eighty-five written reports from the judges appointed, and that they have awarded,

Gold medals,		32
Silver cups,		48
Silver medals,		254
Diplomas,		448
$140 in cash and 8 bronze medals, being part of the $1000 given by the Hon. M. Van Schaick for premiums on silk.		
Vols.	Transactions of the New-York State Agricultural Society,	23
	Transactions of the American Institute,	19
	Colman's European Agriculture,	5
	Brown's Trees of America,	5
	Hovey's Fruits of America,	2
	Hovey's Magazine of Horticulture,	3
	Downing's Landscape Gardening,	2
	Downing's Fruit and Fruit Trees of America,	5
	Downing's Horticulturist,	2
	Mrs. Loudon's Ladies' Flower Garden,	2
	Farmers' Library,	4
	Monthly Journal of Agriculture,	1
	Farmers' Library and Monthly Journal of Agriculture,	1
	Washington's Agricultural Correspondence,	3
	Washington's Letters,	2
	Bridgeman's Young Gardeners' Assistant,	11
	Bridgeman's Fruit Cultivator's Manual,	3
	Bridgeman's Florist's Guide,	1
	Kenrick's American Orchardist,	4
	Gardner's Farmers' Dictionary,	5

American Flower Garden Directory,	2
Prince's Treatise on the Vine,	1
Prince's Pomological Manual,	2
Prince's Manual of Roses,	2
Farmer and Mechanic,	6
American Agriculturist,	5
The Cultivator,	2
Volumes of books,	123

At the suggestion of a valuable agricultural friend, the Board of Managers resolved that those gentlemen to whom awards were made in the agricultural and horticultural department, might receive the value thereof in money or any article of silver ware they might select.

The labors of the Premium Committee are extremely arduous. Under their direction, the articles from 2,194 exhibitors are to be classified and arranged in separate lists. Then competent and impartial judges are to be selected, and their assent to serve obtained. From the judges so appointed, it will be perceived that 85 written reports were returned to the committee: after which, every item in these reports are to be deliberated upon and the awards determined. All this has been promptly attended to, and it is a matter of congratulation that among the numerous competitors, very little dissatisfaction has been manifested. To those of our fellow-citizens who have served as judges, we tender our most sincere thanks.

The Finance Committee, under the direction of James Van Norden, Esq., their chairman, have discharged the onerous duty confided to them with zeal and much ability. We append the detailed report and vouchers of the Finance Committee, and trust that these will be kept open to the access of all persons interested, according to the usual custom of the Institute.

We are proud to believe that there is no diminution of confidence among the discerning portion of our fellow-citizens, in regard to the utility of the pursuits of the Institute. With them it has attained a character and standing which cannot be easily shaken. It has arrived at this, not through the instrumentality of any one man, but by the united and long-continued labor of a few patriotic and public spirited men, who have sought no reward save that which flows from conscious purity of motive, in pressing to promote the general wel-

fare, and persisting through severe trials, until their efforts have been crowned with entire success. All associations are, necessarily, accessible to wily and designing men, whose every act almost covers a sinister motive. From such, we may or may not at all times be exempt. We claim, however, the virtue which belongs to constant watchfulness, and a readiness to expose any and every act which tends to a betrayal of public confidence. The annexed statement of the gross proceeds of our annual exhibitions for a series of years, confirms us in the opinion that there is no diminution of public confidence.

Gross receipts of the Fair of	1839,----------	$8,831 40
	1840,----------	6,581 25
	1841,----------	7,050 00
	1842,----------	6,741 75
	1843,----------	8,808 80
	1844,----------	10,249 71
	1845,----------	12,600 43
	1846,----------	14,312 00
	1847,----------	15,275 27

The exhibition of agricultural implements was uncommonly large, and in many particulars the articles were very much improved. Such was the variety, the excellence of construction, and improvements, in practical application, that it will be difficult in a summary report to particularize; nor shall we attempt it, lest injustice be done. We will only express a wish that every agricultural man could have examined for himself; and we hazard nothing in saying each would have felt amply compensated for his trouble. The application of labor-saving machines to agricultural pursuits is of vast importance. We feel confident in assuring the public that the efforts of the American Institute will be steadily directed to this object; and may we not anticipate, that through it, under the generous patronage of its friends, the day is not distant when we may witness the perfection of the steam plow, for general application, the steam reaper, and the steam hay maker—all within the reach of husbandmen of the most moderate means.

An accident occurred during the Fair which excited general sympathy. An interesting child, daughter of an estimable lady of this city, lost all the fingers of her right hand in one of the straw cutting machines. The circumstances were purely accidental, and we believe the slightest blame does not attach to any one. Such, however, was the feeling occasioned by the accident that the contribu-

tors without any dissention consented to continue in exhibition one day beyond the period fixed for the close of the Fair, that the proceeds might be given in token of their regret to the unfortunate sufferer.

The gross proceeds of the day's exhibition, by sales of tickets and contributions, were	$724 25
Messrs. French & Heiser, proprietors of Castle Garden, generously contributed the amount of rent for one day,	75 00
Mr. G. M. Snow kindly obtained from citizens, not able to attend the Fair,	100 00
The managers voted from the proceeds of sales of lumber at the close of the Fair,	100 75
Making a total of	$1,000 00

This sum was placed in the hands of Myndert Van Schaick, John Campbell, and Shepherd Knapp, Esquires, as trustees to be invested for the benefit of the child, so that she might receive it at the age of 21 years.

Those gentlemen have cheerfully accepted the trust, and made a satisfactory investment of the money, as will appear by their statement.

We most earnestly recommend to the managers of succeeding Fairs, the necessity of placing all the machines by which visitors, and particularly children, are at all liable to be injured, in an inclosure, and under the constant supervision of one person during the whole exhibition.

The continued favors and attentions which the Institute receives from the officers of the army and navy of the United States, deserves our warmest thanks. We earnestly solicit its continuance, for through it we have dispensed much valuable information to our fellow citizens with the distribution of seeds and foreign plants that we hope ultimately will prove of great importance.

To the proprietors of the Long Island rail road and of the Harlem rail road our thanks are due for the facilities cheerfully afforded by them, in reaching with our plows and implements the place designated for the testing of plows and spading match.

To the many friends who have generously aided us we tender our sincere thanks.

ADONIRAM CHANDLER,

Chairman of the Board of Managers.

CIRCULAR.

The Twentieth Annual Fair of the American Institute of the City of New-York, will be held at Castle Garden, commencing October 5, 1847.

The Managers present the following general outlines of a PROGRAMME of the first and second weeks of the coming celebration of American Arts and Industry.

Friday, October 1—*Saturday, October* 2.—Specimens of Manufactures and the Arts for Premiums, must be delivered in the Garden on one of those days.

Monday, October 4—will be appropriated for the arrangement of the contributions. Vegetables, Fruits, and Flowers, for the Horticultural Room, should be brought this day, before 12 o'clock.

Tuesday, October 5.—The Exhibition will open to the public at 9 o'clock, A. M., and continue until 10 P. M., through the Fair. The Opening Address will be delivered this evening, at 7½ o'clock, in the Garden. A grand display of fireworks at 9 o'clock.

Wednesday, October 6.—The Steam Engine, with moving machinery, will be in operation this day, and continue during the Exhibition. Bands of Music daily, as usual.

Thursday, October 7.—Fireworks at 9 o'clock, P. M.

Friday, October 8.—Plowing and Spading Matches in the vicinity of New-York. An address in the field.

Saturday, October 9.—The week will close with splendid Fireworks at 9 o'clock.

SECOND WEEK OF THE EXHIBITION.

Monday, October 11.—Cattle and other Live Stock, to be exhibited on Wednesday, must be entered on the books this day, and pedigrees delivered to the Clerk, at the committee room, corner of 23rd Street and 5th Avenue. If previously sent to T. B. Wakeman, the Corresponding Secretary of the Institute, they will be attended to. The NATIONAL CONVENTION OF FARMERS, GARDENERS AND SILK CULTURISTS, will meet at Mechanic's Hall, No. 472 Broadway, at 11 o'clock, A. M.

Tuesday, October 12.—National Convention continued.

Wednesday, October 13.—The Cattle Show opens at 9 o'clock, A. M., at the spacious premises corner of Twenty-third Street and Fifth Avenue, rear of Madison Cottage, when all the animals must be on the ground. Agricultural Address in the evening, at 7½ o'clock.

Thursday, October 14.—Second and last day of the Cattle Exhibition. Anniversary Address at the Broadway Tabernacle, at 7½ o'clock, P. M., by Fletcher Webster, Esq., of Boston, Mass. The New-York Sacred Music Society have, as usual, generously volunteered their services. Tickets for visitors, free of charge, at the Clerk's desk.

Aquatic Exhibitions, occasional Addresses, and other interesting exercises and displays, from day to day, will be noticed in the public prints.

Contributors for exhibition, as well as competition, to insure the best locations, should bring their articles on one of the receiving days named above.

The Judges will meet early the first week, after which no further examination can be had.

For particulars in relation to Vegetables, Fruits, Flowers, &c., see Horticultural Circular.

Exhibitors of machines intended to be put in motion, are earnestly requested to bring them on the first receiving day, that full time may be afforded for properly fitting them to receive the motive power in connection with others.

Seasonable public notice will be given of the place of the Plowing and Spading Matches, hour of commencing, means of conveyance, &c.

The best evidence of pedigree of Cattle, Horses, and other choice live stock, is highly important.

Subjects for the consideration of the National Convention of Farmers, Gardeners, and Silk Culturists, of the greatest national interest, will claim its attention.

The due protection of American Industry—a system of Internal Improvement—an Agricultural Department of the general government, to watch over and foster this precious interest, conformable to the earnest recommendation of General Washington to Congress and the people of the United States, over fifty years ago.

More general attention is demanded of our people to the preservation, in their purity, of the best breeds of Cattle, Horses, &c., especially Sheep, so that our skilful manufacturers, to whom all praise is due, may not be compelled to resort to European markets for the materials of fine cloth.

Wool and Woolens occupy a large space in the commerce of the world; besides, in our climate, woolen fabrics are indispensable to our comfortable existence. Samples are requested from different states, particularly from pure bloods. The Institute will provide some of the best specimens from Europe, that comparisons may be made. Samples from flocks which have been longest in the country will enable us to judge whether the climate has deteriorated or improved its fineness and value, and also indicate the most favorable portion of our country for growing this great staple.

The establishment of Colleges and Schools in the States of the Union, for teaching practical agricultural knowledge, will also claim the attention of the Convention.

Within the last forty years, by the application of science to manufactures, the principal clothing of our people has been produced by less than one half the labor which before that time was required. Who can say the severity of agricultural labor might not have been mitigated in proportion, if the farmer had appreciated the power of knowledge which, unfortunately too many have contemned and

derided; but an awakening spirit has gone forth, and examples of bountiful crops, cultivated under the direction of science, united with experience, have staggered the most incredulous.

The condition of the Linen Manufactures of our country; what has caused them to languish, and the practicability of their success, forms another subject of inquiry.

To the Silk Culturists, who will compose an important part of this Convention, we shall look for the causes which seem, in some measure, to have temporarily retarded the rapid progress of silk, contrary to the high hopes heretofore so almost universally entertained. The Institute has always believed, that with experience and a proper application of skill and industry, fostered in its infancy by wise protecting laws, it cannot fail of becoming one of the great staples of the country.

Silk Culturists are desired to continue their answers to questions submitted at former Conventions by letter, if they cannot attend, that the public may have the benefit of any new facts or important experiments of the last year.

Facts are wanted in relation to the Potato Disease, to enable the Institute to answer inquiries made by the Royal Central Society of Agriculture of France, and other societies, whose indefatigable investigations are still directed to the causes and the remedy of this appalling disease.

Almost one-fifth of a century has elapsed since these anniversaries commenced, embracing seasons of peaceful, happy, national progress, as well as of disastrous commercial revulsions, deranging industry, and paralyzing individual enterprise to a fearful extent. Still the American Institute, in these vicissitudes, has moved steadily on in its prosperous career, with increasing popularity and power. At the most appalling crisis, an annunciation of another celebration has rallied more than one hundred thousand of our fellow citizens, because the principles and objects were believed to be truly American, and in harmony with our country's welfare.

The magnificent display last autumn, at Castle Garden, the operations and extended correspondence since, have deeply impressed the public mind, and made the institution better and further known, and enlisted in its favor a greater power of patriotism and philanthropy than ever. In view of greatly enlarged advantages, the Managers invite corresponding exertions from the enterprising, the

ingenious, the great and the good, of all professions and occupations, in procuring such a display of specimens as will do more ample justice than has yet been done to American genius and industry, in improvements, wherever they have been applied—such a show of excellence as will vie with any country.

Public spirited individuals are already seconding the wishes of the Managers, by the offer of special premiums, to be awarded for articles which are in extensive demand, or such as are calculated in time to become important staples, but whose progress and perfection have been retarded by adverse circumstances.

The indications are, that these are only the commencement of much greater contributions. They are examples worthy of high praise, as they give fresh stimulus to competition, the soul of improvement, and widen the great field of emulation. They will be added to the increased amount of premiums bestowed to encourage improvement from the earnings of the Fair, which last year equaled $3,500.

Five hundred dollars have been appropriated by the Managers, to be bestowed in money premiums on the exhibitors of machines and useful fabrics of the work shop, but more particularly to indemnify for the trouble of preparing and bringing to the Fair, new, ingenious, complicated, well finished, and useful moving labor-saving machines; which, as they impart life to the scene, are always objects of high admiration; and to encourage all well finished and useful productions supplied from the shops of our handicraftsmen, and by our diversified trades, is always desirable.

In the products of the loom, America stands pre-eminent. The history of industry affords no parallel to her rapid march to perfection.

The manufacture of iron was commenced but yesterday. In some of its most important branches our foreign competitors have been effectually driven from our markets.

Let us have a full display at Castle Garden—specimens of the highest finish and perfection from each and every department; in fact, a practical illustration of the efforts of freedom of thought and action, and the diffusion of knowledge under free institutions.

The Managers will not close without acknowledging the obligation due to the industry, zeal, and patriotism of the ladies, in carry-

ing out our former exhibitions. From the opening of the first Fair, in 1828, through the whole intervening succession of years, they have never failed to offer their full share of contributions of utility, taste and beauty, wrought with their own hands, continually admired as the dense crowd around where they have been placed, has always indicated; but above all, the vast concourse of these fair visitors, gracing our saloons, and dispensing their smiles of approbation on all that was most excellent, no doubt has greatly contributed to those masterly productions of genius and skill, which have conferred such glory on our country.

Extra special Premiums to be awarded at the Twentieth Annual Fair.

THE "VAN SCHAICK PREMIUM."

The $1,000 generously given by Myndert Van Schaick, Esq., of this city, to be bestowed by the American Institute in premiums for ten successive years, will be awarded at the 20th Annual Fair, in October, 1847, as follows:

The silk to be the growth of the United States, and to be manufactured within the year.

For the best piece of silk, 27 inches in width and 60 yards in length,	$50 00
For the best piece of silk, for handkerchiefs, 60 yards in length,	30 00
For the best pieces of silk velvet, not less than 20 yards,	20 00
For the best exhibition of silk ribbon, not less than 12 pieces, of 10 yards each,	20 00
For the best reeled silk, not less than 10 lbs.,	10 00
For the second best " "	5 00
For the best sewing silk, of any color,	10 00
For the best bushel of peanut cocoons,	10 00
For the second best "	5 00
	$160 00

The Van Schaick bronze medal will accompany each of the foregoing premiums.

THE "TALLMADGE PREMIUM."

A gold medal for the best 20 yards of linen, regard being had to the economy of its production.

THE "KNAPP PREMIUM."

A gold medal for an improved wagon, for farming purposes; as regards construction, lightness of draft, strength, durability and cost.

A gold medal for the best 4-wheeled leather covered wagon, for two or four persons, for common use; taking into consideration lightness, strength, durability, economy and appearance. Price to be given; also price for one with seats for six.

A gold medal for the best double harness for wagon.

A gold medal for the best single harness for wagon.

It is a rule of the Institute, that the exhibitors have no claim to the premiums, if there is no competition.

Roswell L. Colt, Esq. of Paterson, New-Jersey, has placed $100 with the Institute, for an analysis of corn, its cob, stalk, &c.

REPORT OF THE BOARD OF AGRICULTURE

OF THE TWENTIETH ANNUAL FAIR OF THE AMERICAN INSTITUTE.

To the President and Managers of the American Institute:

Gentlemen—The Agricultural department of the Institute, in compliance with general usage, submit the following report of their proceedings at the Annual Fair, together with some general remarks for promoting the advancement of this most important art.

The committee, consisting of the following persons, viz:

PHILIP SCHUYLER, *President,*
NICHOLAS WYCKOFF, *Vice President,*
J. LAWRENCE SMITH, *Secretary,*

R. T. Underhill,	Thomas Addis Emmet,
Charles Henry Hall,	Jordan L. Mott,
Thomas Bridgeman,	Lewis G. Morris,
W. J. Townsend,	John G. Bergen,
Henry A. Field,	James Depeyster,
Robert S. Livingston,	Samuel Walker,
Thomas Bell,	John O. Choules,
Charles Dennison,	H. A. S. Dearborn,
E. M. Dodd,	R. L. Pell,
Edward Clark,	James Rennie,
Francis Barretto,	Roswell L. Colt,
James Monroe,	Ambrose Stevens,
Benjamin L. Benson,	D. S. Mills,

Robert Grant,

held various meetings preceding the fair, for the purpose of preparing a list of premiums which they deemed would be productive of exciting emulation among the numerous class of competitors for the same, and advance this most important interest.

How far this has been obtained, your committee leave to be judged of by the exhibition made at Madison Cottage, where a greater number and variety of full bred animals were shown than at the late State Fair; however, the exhibition was by no means such as your committee deem might be displayed, were adequate inducements held out for the purpose.

To ascertain what these inducements should be, your committee have held various consultations, and much discussion, and they submit the following as the conclusions to which they have arrived: First, that the premiums should be greater in amount, and not so diversified as heretofore. This would in some measure, where the proprietors from the expense and risk of bringing forward their best stock, and should they obtain premiums, compensate them for their exertions. Second, that a mart should be created at these annual fairs for the sale and purchase of stock, of various kinds offered for premiums. Should this plan be adopted, and information of the same be generally diffused throughout the United States, many persons would be induced to attend as purchasers, and breeders would bring forward their improved stock, and no place in the Union is so well adapted for this purpose as the Empire City, where all sorts of commodities are bought and sold. The advantage of this place and plan for the purpose, are so obvious, that your committee do not deem it necessary to dilate more fully on the subject.

The Exhibition was held at Madison Cottage, on Wednesday and Thursday, the thirteenth and fourteenth of October, at a convenient place, but with hardly space enough for a fine display. It was visited by a vast concourse of persons, among whom were seen the Governor, and other officers and representatives of State, numerous enterprising farmers, and many ardent and patriotic breeders of improved stock. The judges, selected from our most practical citizens, and whose names are appended to the several departments in which they acted, return the following premiums, which were awarded to the several successful competitors, viz:

THOROUGH BRED, BLOOD, AND GRADE HORSES.

Henry Booth, Morrisania, N. Y., for the best thorough bred stallion. (Trustee.) Silver cup.

George M. Patchen, Brooklyn, L. I., for the best trotting stallion of high blood. Silver cup.

Lawrence Devoe, Elizabethtown, N. J., for the second best thorough bred stallion. (Flying Childers.) Silver cup.

Jacob N. Blakeslee, Watertown, Conn., for the best stallion for all farming purposes. Silver cup.

William Stevens, Rahway, N. J., for the second best horse for all farming purposes. Silver medal.

MATCHED HORSES AND MULES.

Edward Long, Edward H. Smith, and Albert Emmons, *Judges.*

Edwin Hoyt, corner of Fifteenth street and Fifth Avenue, for the best pair of matched coach horses. Silver cup.

Robert M. Blackwell, Astoria L. I., for the second best pair of matched horses. Silver cup.

F. A. Putnam, 474 Broadway, for the third best pair of matched horses. Silver medal.

Jonathan Thorne, 3 Washington Square, for a pair of iron grey horses. Silver medal.

Chas. Bathgate, Morrisania, for the best pair of farm horses. Silver cup.

Roswell L. Colt, Paterson, N. J., for the second best pair of farm horses. Silver medal.

MULES.

Daniel Abbott, Brooklyn, L. I., for the best pair of mules. Silver cup.

David S. Mills, Newtown, L. I., for the second best pair of mules. Silver medal.

FAT CATTLE.

Arnest Fink, Thos. F. Devoe, O. C. Denslow, *Judges.*

Sidney Wills, New Hartford, N. Y., for the best fat ox. Silver medal.

Thos. Bell, Morrisania, N. Y., for the best pair of fat cattle. Silver cup.

FAT SHEEP.

Thos. Bell, J. Lawrence Smith, and Samuel Allen, *Judges.*

Edward Hallock, Milton, Ulster Co., N. Y., for the best fat sheep. Silver cup.

SOUTHDOWN AND LONG WOOLED SHEEP.

J. McDonald McIntyre, L. D. Clift, *Judges.*

Obadiah Elliot, Middleham Union, N. J., for the best Southdown buck. Silver cup.

John Wait, Coldenham, Orange Co., N. Y., for the best Southdown ewes. Silver cup.

John Wait, Coldenham, Orange Co., N. Y., for the best Southdown lambs. Silver medal.

Peter Pirnie, East Chester, Westchester Co., N. Y., for the best Leicester ram. Silver cup.

Thos. Bell, Morrisania, N. Y., for the best long wool ewes. Silver cup.

Thos. Bell, Morrisania, N. Y., for the best long wool lambs. Silver medal.

FINE WOOL SHEEP.

Geo. Oakley and Chas. L. Fleischman, *Judges.*

James L. Randall, Lysander, Onondaga Co., N. Y., for the best Spanish Merino buck. Silver cup.

Hiram Whitlock, North Salem, N. Y., for the best Saxon Merino buck. Silver cup.

Hiram Whitlock, North Salem, Westchester Co., N. Y., for the best Saxon Merino ewes. Silver cup.

Joseph Blakeslee, North Salem, N. Y., for the best Spanish Merino ewes. Silver cup.

FULL BRED STOCK.

Lewis G. Morris, C. N. Bement, Lemuel Hurlburt and John Bathgate, *Judges.*

Thomas Bell, Morrisania, N. Y., for the best Durham bull. Silver cup.

W. K. Townsend, New-Haven, Conn., for the best Durham bull calf. Silver medal.

Thomas Bell, Morrisania, N. Y., for the best Durham cow. Silver cup.

John A. Pool, New-Brunswick, N. J., for the best Durham heifer. Silver cup.

Roswell L. Colt, Paterson, N. J., for the best Devon bull. Silver cup.

Jacob N. Blakeslee, Watertown, Conn., for the best Devon cow. Silver cup.

Jacob N. Blakeslee, Watertown, Conn, for the best Devon heifer. Silver cup.

Jacob N. Blakeslee, Watertown, Conn., for the best Devon bull calf. Silver medal.

Roswell L. Colt, Paterson, N. J., for the best Devon heifer calf. Silver medal.

Roswell L. Colt, Paterson, N. J., for the best Alderney bull. Silver cup.

Roswell L. Colt, Paterson, N. J., for the best Alderney cow. Silver cup.

Roswell L. Colt, Paterson, for the best Alderney bull calf. Silver medal.

Roswell L. Colt, Paterson, N. J., for the best Alderney heifer calf. Silver medal.

Roswell L. Colt, Paterson, N. J., for the best Alderney heifer. Silver cup.

Morgan Colt, Paterson, N. J., for the best Ayrshire bull. Silver cup.

NATIVE STOCK.

Jacob D. Van Winkle, A. V. Houghton, Geo. A. Toffey, *Judges.*

Thomas Bell, Morrisania, N. Y., for the best cow. Silver cup.

Joseph Clowes Harsimus, N. J., for the best heifer. Silver medal.

Lewis G. Morris, Fordham, N. Y., for the best bull calf. Silver medal.

GRADE STOCK.

Wm. Dobbie, Wm. Pirnie and Obadiah Elliott, *Judges.*

James Bathgate, Fordham, N. Y., for the best two year old bull. Silver cup.

Daniel D. Denise, Freehold, N. J., for the best bull calf. Silver medal.

Lewis G. Morris, Fordham, N. J., for the best cow. Silver cup.

Thomas Bell, Morrisania, N. Y., for the best one year old heifer. Silver medal.

Lewis G. Morris, Fordham, N. Y., for the best heifer calf. Silver medal.

Jacob Lorillard, Westchester, N. Y., for the best two year old heifer. Silver medal.

WORKING OXEN.

Peter H. Brink, Edward T. Stelle, Edward H. Smith, *Judges.*

Jacob N. Blakeslee, Watertown, Conn., for the best pair of working oxen. Silver cup.

Pliny Goold, East Nassau, N. Y., for the second best pair of working oxen. Silver medal.

Jacob N. Blakeslee, Watertown, Conn., for the best team of oxen, six yoke. Twenty-five dollars.

SWINE.

Samuel Allen, Henry A. Field and Samuel Van Wyck, *Judges.*

William Stickney, Boston, Mass, for the best boar. Silver cup.

M. Eels, Twenty-sixth street, for the second best boar. Diploma.

Samuel Love, Fifty-third street, for the best sow. Silver cup.

Samuel W. Benedict, Jr., Richmond co., N. Y., for the second best sow. Diploma.

Edward Wait, Montgomery, co., N. Y., for the best shote. Silver medal.

Edward Wait, Montgomery co., N. Y., for the best lot of pigs. Silver cup.

Samuel Love, Fifty-third street, for two fat hogs. Silver medal.

Henry Delafield, Yorkville, N. Y., for a lot of China pigs. Silver medal.

William Stickney, Boston, Mass., for a Suffolk sow, imported shotes and Suffolk pigs. Silver medal.

POULTRY.

J. P. Seldin, Daniel D. Denise and Samuel H. Townsend, *Judges.*

William Thompson, Twenty-third street, for a pair of fowls, a cross of pheasant and game. Trans. Am. Inst.

Roswell L. Colt, Paterson, N. J., for the best pair of white turkeys. Trans. N. Y. State Ag. Soc.

Roswell L. Colt, Paterson, N. J., for the best white Guinea hens. Trans. N. Y. State Ag. Soc.

Roswell L. Colt, Paterson, N. J., for the best Muscovy ducks. Trans. N. Y. State Ag. Soc.

Roswell L. Colt, Paterson, N. J., for the best Malay fowls. Trans. N. Y. State Ag. Soc.

Roswell L. Colt, Paterson, N. J., for the best Jersey blue fowls. Trans. N. Y. State Ag. Soc.

L. H. Martin, Paterson, N. J., for the best Silver Spanish pheasants. Trans. N. Y. State Ag. Soc.

L. H. Martin, Paterson, N. J., for the best Creole fowls. Trans. N. Y. State Ag. Soc.

L. H. Martin, Paterson, N. J., for the best black Poland fowls. Trans. N. Y. State Ag. Soc.

L. H. Martin, Paterson, N. J., for the best golden pheasants. Trans. Am. Inst.

Robert Bolden, Fort Lee, N. J., for the best hen (called the every-day hen). Trans. N. Y. State Ag. Soc.

SHEPHERD DOGS.

Charles Wright, James Lovel, Edward Wait, *Judges.*

Henry A. Field, Third avenue, for the best shepherd dog. Farmers' Library.

For particulars in relation to the Horticultural Department, your committee refer to the able and judicious report of Thomas Bridgeman, its superintendent.

The Plowing Exhibition came off at Harlem, owing to a violent storm of rain, which prevented plowing at Hempstead, Long Island, in conjunction with the "Queens County Agricultural Society," as originally intended; which caused much regret, in consequence of there being on the ground many *inventors of improvements* in plows, as well as farmers with their teams of oxen and horses, as well as many practical plowmen, all arranged under the supervision of *Mr. Carl*, the acting secretary of the society above named.

The result was an adjournment for fair weather, and subsequently, the matches took place at Harlem, under the direction of Messrs. Ellsworth, Esq., of Windsor, Conn., and Henry Meigs, Esq., members of the Institute; under whose able advice and management the business was judiciously carried out. As usual, the plows were of the most approved inventions of the present time, and the plowing was very perfect and satisfactory.

The following were the judges appointed:—Messrs. Thomas Bell, Edward Hallock, and Chas. Bathgate; who reported that the plowing, by all the competitors, was superior to any similar exhibition they have ever witnessed on any former occasion; and they beg leave to take this method of complimenting all the plowmen upon their work.

The following rules for the plowing match were adopted:

1st. The quantity of ground for each team, to be *one-eighth of an acre.*

2d. The time allowed to do the work in, will be *one hour.*

3rd. The furrows to be not less than *seven inches deep.*

4th. The teams to start at *one time*, and each plowman to do his own work, without a driver, except ox teams will be allowed a driver to plow the first furrow.

PREMIUMS AWARDED.

To James Clark, for the best plowing. Silver cup.
Joseph Swannell, for the second best plowing. Silver medal.
John Brewster, for the third best plowing. Diploma.

The Spading Match excited much interest among the spectators. The quantity of ground to be spaded was 20 feet long and 10 feet wide.

The judges were—Messrs. Nicholas Wyckoff, Wm. K. Townsend, and John B. Sands.

PREMIUMS AWARDED.

To Joseph P. Lodge, for the best spading. Silver cup.
Richard Marry, for the second best spading. Silver medal.
James Wilson, for the third best spading. Diploma.

Agriculture may be defined the art and science of so cultivating the earth as to make it produce the greatest quantity of the most nutritious food, for the support of man and beast. It has accordingly been invested with almost a sacred character, and been practiced and held in the highest estimation by all the nations of antiquity with whose history we are conversant. Considering that on agriculture is based the entire fabric of human civilization and subsistence, it has the predominance over all other occupations to which the efforts and industry of man can be directed. It constitutes the source or basis on which both commerce and manufactures are founded: it furnishes the only source of subsistence for the progressing multiplication of our species, which increase in a geometrical ratio, while the products of the earth are only to be multiplied in an arithmetical ratio. Does it not, then, become the duty, the incumbent duty, of every philanthropist, to ascertain and devise every means for its advancement?

An increase of products becomes absolutely necessary to supply the increased demand which takes place in our country, not only from the increase of population by our own natural means, but the immense emigration which flows and will continue to flow to our free and happy country, from the dense and oppressed population of foreign countries; and more especially since wars have almost ceased among them, and their present population so great as to press on the means of obtaining even a partial subsistence—such as is now

experienced not only in Ireland, Scotland and England, but on the Continent also. By bringing new lands into cultivation, and inducing the intelligence of our masses to bear on the subject, improvements can and will be made to such an extent as will not only enable us to support an increase of population at home for many centuries, but afford an ample supply of surplus food for the suffering wants of all foreign countries.

Man is so constituted by nature, as in all situations to require, as necessaries for subsistence, food, clothing, and shelter.

The Deity, in his beneficence, has furnished over 100,000 vegetable productions which may be used as food; but only a few are cultivated in this State, such as the cereal plants, leguminous vegetables, and farinaceous roots: Cotton, rice, sugar and tobacco, are confined to our southern neighbors. These, together with animal productions, constitute the chief source of nutriment and clothing to man. To increase these productions is a desideratum devoutly to be wished; and as "knowledge is power," every means that can be devised should be resorted to, to obtain so desirable a result.

The modes heretofore adopted by the Institute, of holding annual fairs and distributing premiums, together with the formation of farmers' clubs, have tended to diffuse much general information, and been productive of much satisfaction. The establishment of an agricultural college near the city, and under the direction of competent teachers, who profess and are enabled to give both theoretical and practical information, would be of infinite service. They have been established in many countries. It would furnish employment for a numerous class of our young men, who know not what profession to pursue. It would be the means of diffusing more character, more emulation, more knowledge, among this useful class of citizens; and we would have more Cincinnatus, Columellas, Virgils, Varros, Fabricius, and Catos, who remarks, "From husbandmen spring our strongest men, and bravest soldiers: their's is the most certain, the most honest, and the least invidious gain; and they are also the best affected members of the state."

We have had and can boast of our Washington, Wayne, Greene, Schuyler, Clintons, and a host of other worthies who have devoted themselves to agricultural pursuits, down to our *modern* Cato, who has earned for himself renown not only in the civil but agricultural department of our country—need we name Silas Wright, Jr. The

results of a proper agricultural education would give us thousands of such characters; and as the sustainment of the mighty fabric of our most happy government depends principally upon the dissemination of information among this class, which constitute the main reliance for the support and preservation of our lives, liberties, and properties, which we now so fully and luxuriantly enjoy; it behooves our legislators to aid with their fostering beneficence such a project, and it will not be easy to calculate the extent of the improvements and benefits which will be made on this important art. The progress heretofore made among our citizens, who seem to have intuitive taste for this occupation, has been chiefly the result of the experience of unscientific men—by those who have it not in their power to avail themselves of the experience and experiments contained in the various publications which are constantly emanating from the press, nor of that chemical knowledge of the combination of soils and the proper food of such plants as we wish to cultivate, as are elaborated in the works of Sir Humphrey Davy. May we not look for as many improvements in the mode of cultivating the earth, and of the utensils used and to be used in the application of our labor, as has been made in the immense improvements in the manufacturing art, by such men as Watts and Arkwright. Who shall say what results such a direction of talents may eventually lead to? "We have not yet discovered the art of converting azote, carbon, oxygen, and hydrogen, lime or clay, into nutritive matter. The vegetable principle universally has the power of effecting this by its diversified organization, with its own compounded substances; and this, so made, becomes our food." It is known, that the electric fluid, that mysterious and universal agent, is intimately connected with the vegetable process: and may we not, with as much certainty as it is now used to transmit intelligence, with lightning speed, thousands of miles in the smallest space of time, predict that it will add fertility to vegetation, and that the means for effecting it will be discovered by the ingenuity of some of our favored citizens. There is no end of such suggestions: our enterprize is acknowledged by all the world. The happiness and general well-being of our people, the rapid development of our resources, and the increase of our wealth, have excited the envy of all despotic governments, and our late successes in the Mexican war has caused them to fear and respect us. Let us, then, persevere in our endeavors to excel in this, the most important of all pursuits to which the labor of man can be applied.

We conclude our report by recommending the adoption of the plans suggested for the amelioration and improvement of this most important subject, both in a national, state, and local point of view.

All which is respectfully submitted.

PHILIP SCHUYLER,
Chairman.

HORTICULTURAL REPORT.

TO THE MANAGERS OF "THE AMERICAN INSTITUTE," PRESIDING AT THE TWENTIETH ANNUAL FAIR, HELD AT CASTLE GARDEN, OCTOBER, 1847.

Gentlemen—Time, in its onward march, has leniently spared me to furnish a Report of Agricultural and Horticultural productions presented for competition at the twentieth Annual Fair of the American Institute. With unmingled pleasure, I have noticed the ardent zeal manifested by truly enlightened citizens, in fostering and advancing the interests of Terraculture.

Aware of its paramount importance, the officers of your Institute, with a perseverance entitled to the highest praise, have vigilantly labored to establish an Agricultural School and Experimental Farm, in the vicinity of New-York. Futile objections have been raised by prejudiced or unthinking individuals against its prescribed location; but the advantages which a school of this description would derive from its contiguity to the "Empire City," are so manifest, that opposition to this noble project must ultimately become so feeble as not to deserve the notice of the reflecting.

It is sincercely to be hoped that our next Legislature will sustain you in the furtherance of this measure, by the adoption of such means as will place this school on a permanent foundation. Other states would follow so patriotic a course, and the benefits derivable from agricultural information would be disseminated throughout the length and breadth of the land.

In these seminaries, the minds of the students should be imbued with sound knowledge derived from long-tried practice. The ways

of our forefathers, though abounding in *errors*, yet were mingled with *truths*, which will ever maintain their supremacy. Theory "made easy" is "a dangerous thing." Constant practice, combining the careful noting of results—the nice discrimination of the peculiarities of soils—the due observation of the influence of climate, and other contingencies, can alone make the perfect scholar. To use a metaphor, *Practice* and *Science* should be seen hand in hand, each assisting the other, willing to take a friendly hint, both determined to contribute their quota to the treasury of knowledge.

The mere theorist, by repeated and labored attempts to force upon our cultivators the results of his speculations in the closet, has retarded agricultural improvement at least half a century; because his theories are often not only opposed to the well-established principles of nature, and the dictates of common sense, but are also in conflict with the experience of mankind on this subject, for hundreds of years past. When the mere theorist has been once convicted of spreading false notions, the practical man will be likely to distrust him altogether in future, and condemn alike the good and the bad. A quaint writer on this subject remarks, "Never did I see a man, who swallowed much mauseous physic, possess a pleasurable countenance, nor land that was injudiciously *doctored*, ever turn to good account." Temperance in all things should be our polar star. It must be acknowledged that Nature, bountiful as she is, may be made still more fruitful by the inventive genius of man, when guided by sound discretion; but the unskilful hand mars whatever it touches, and too frequently deetroys that which it intended to perpetuate. Well might the Bard exclaim—

> "Thine is a glorious volume, Nature! Each
> Line, leaf, and page, is fill'd with living lore;
> Wisdom more pure than sage could ever teach,
> And all philosophy's divinest store;
> Rich lessons rise where'er thy tracks are trod,
> The book of Nature is the book of God."

It may be truly said, that the whole field of Nature is laid open to the investigation of man, and that its study is the more accessible, because it is the easiest as well as the most delightful of all studies.

The student of literature must have his library, the natural philosopher and chemist his apparatus, and the student of man his annals and records; which are frequently so perplexing, that much of his

time is spent in testing their correctness, and the results of his study are often far from satisfactory, even to himself; whereas the tillage of the soil invigorates man's mental as well as his bodily powers, and elicits more deep science, and more observation, and more general acquaintance with Nature, whose laws cannot be violated with impunity, than any other pursuit in life

It should be borne in mind that the products of our fields, and gardens are natives of all the various climates and soils of the earth, each requiring its peculiar aliment. How preposterous, then, the expectations of people in general to raise whatever they may fancy, without reference to soil, season, or other important considerations. Such plants as require heat, will grow best in hot summer weather, while those vegetables whose most essential nutriment is moisture, must in cold climates, be raised either in the spring or autumn, and in our Southern States in the winter. Our object should, therefore, be to improve the various seasons as they pass, in the cultivation of such productions as can be brought nearest to perfection, in whatever situation we may be placed.

I have been led to the discussion of this subject from the efforts of zealous and patriotic theorists to introduce productions of tropical climates into our gardens as substitutes for the potato. As well might we expect to see the fields of England waving with Indian corn or cotton, as to witness the plants indigenous to tropical climates, attain perfection in the variable temperature of the Eastern and Middle States of North America.

The effect of climate cannot be better demonstrated than in the growth of the turnip, which requires great moisture for its perfection. As an instance: Mr. R. Rowley, of Hastings, Weschester county, exhibited at the Fair, four turnips averaging twenty inches in circumference, being one-third larger than the same variety generally attains in this country, and which were regarded as *giants* by many a visitor; but they were *dwarfs*, when compared with the turnips grown in the humid fields of "merry England." To evade the laws, poachers have been known to scoop out this vegetable, and to pack a hare, a rabbit, a pheasant, and other prohibited game, in the rind—enough to supply a good round family with an ample repast at the Christmas season, so well depicted by Dickens in his "*Cricket on the Hearth.*" Two or three of these turnips mashed, furnish, with caper sauce, sufficient "trimmings" for an English leg of mutton,

confessed by epicures to be unsurpassed by any dish; which opinion was heartily coincided in by George the Third, surnamed the Royal Farmer, who held this joint and its adjuncts in high estimation.

The potato is now considered one of the most important productions of the earth: upwards of one hundred millions of bushels having been raised in the United States in a single year. Much controversy and speculation have recently taken place relative to the alleged disease of this esculent, and many a ridiculous conclusion has been drawn by writers on this subject, some of whom seem to have lost sight of the difference between cause and effect. Rottenness is the effect of deterioration produced by the absence of a living principle. In a certain stage of growth, cherries, after a single week's rain, will rot on the tree. Such, also, is the case with other fruits. It is well known that grapes, gooseberries, currants, melons, &c., in some unfavorable seasons and situations, often prove a failure. Indeed, it would be difficult to name any production of the earth that yields full and perfect crops annually; on the contrary, it is well known that famine has been of frequent occurrence in populous countries, through short or defective crops of the necessaries of life. We read in the Old Testament of one famine which lasted seven years. Why, then, I would ask, should we expect uniformly good potato crops twice in every year? Having devoted much attention to the nature of plants in general, I have come to the conclusion that the alleged disease in this esculent is not caused by defective seed, but that it is generally the effect of variableness of the weather, and of one extreme of temperature suddenly following another. In some instances the defect may have been occasioned by the injudicious use of acrid manure, which is destructive to all descriptions of succulent plants, in hot, dry weather. New land, without manure, generally produces the best crops in dry seasons. It must, however, be acknowledged, that the extremes of heat, cold, and moisture, are alike detrimental to vegetation in all seasons; and that hot, dry summers, are often attended with results as fatal to vegetable productions, as the coldness of winter.

It is well known to all experienced gardeners, that the difficulty of raising early cauliflower in our climate is such, that, in the event of one month's extreme warm weather taking place when this vegetable is near maturity, its effects are so injurious that very few perfect heads can be obtained; whereas, in the temperate climate of England, this vegetable, as well as broccoli, which some consider the

greatest luxuries of a garden, are as plentiful for eight or nine months of the year as cabbages are here.

With heartfelt pleasure, I now enter upon a description of what Flora, the Goddess of Flowers, (those glowing, chaste and beautiful inmates of the garden of nature,) furnished on this interesting occasion. Full twenty thousand dahlia blooms, of the richest tints and most perfect formation, embracing over two hundred varieties, were offered to the admiring gaze of the visitors to the Fair. Delightful as was their appearance, the scene was still heightened in attraction by that modest queen of the parterre, the rose, the choicest of her offspring, appearing in its unassuming yet captivating vesture. Bouquets arranged with effective taste, baskets decorated with many "an emblem sweet," and ornamental designs, which reflected the glories of the patron goddess, riveted the attention of our contemplative ladies. Do they not themselves appear most lovely when engaged in the instructive and virtue-creating cultivation of these floral beauties? As an example worthy of imitation, a lady from our sister city of Brooklyn furnished on this occasion twenty-two beautiful bouquets, and three dishes, embracing twenty-two distinct species, and seventy-eight varieties of the flowers of the season, which adorned this most inviting department of the exhibition. The statue of Flora was crowned with a "living wreath of beauty," while in her fair hands the gems of the garden, and wild flowers of the field, betokened that the gladdening nymph is capable of conferring the highest happiness on man, strewing his path through life with flowers. Nor was so sweet a goddess in her sphere alone: Pomona was there, as the representative of more than two hundred varieties of fruit; apples, fourteen inches in circumference; perfect specimens of pears, peaches, nectarines, plums, quinces, and grapes, alike grateful to the appetite and conducive to health, attested her kind superintendence over these "luscious dainties." A wreath of cranberries encircled her head, emblematic of her wish that men should taste the most enduring of her ample fruits the long cold winter through.

But there, too, is that joyous goddess who delights in the golden harvest—in mountain, hill, and valley crowned with plenty, and who spreads "a common feast for all that live:" Ceres! generous deity, from thine own "green arch" behold thy bounty! At thy feet are laid not only the products of the field, but those of the dairy. As a rival to Stilton and Cheshire, in the fatherland, have we not here mammoth cheeses, evidences of what an American dairy can produce? verily, cheeses nearly six hundred pounds in weight, with a

circumference of ten feet. Pumpkins weighing over two hundred pounds, and of ten feet rotundity. Squashes of nearly the same magnitude. Beets twenty inches round and two feet in length. Sweet potatoes, in girth a foot, and in length eighteen inches. Corn from fourteen to eighteen inches long; some ears of the fourteen row kind containing about 700 grains, and weighing nearly a pound, with abundant practical proofs of what can be effected by skilful culture, as will appear in the catalogue subjoined, of all the most important articles entered for competition on this gratifying occasion.

FLOWERS.

Peter B. Mead, William S. Carpenter, Richard Field, and Aaron Arnold, *Judges.*

G. C. Thorburn, Astoria, L. I., for several fine varieties of dahlias, renewed during the Fair. A silver cup; and for 24 varieties of choice dahlias, exhibited October the 11th, a copy of Brown's Trees of America.

Dunlap & Thompson, 635 Broadway, for a display of splendid dahlias, frequently renewed the first two weeks of the Fair. A silver medal; and for the best twenty-four varieties of dahlias, exhibited October the 11th, a silver medal.

L. Prevost, Astoria, L I, for an assortment of dahlias, renewed during the Fair. The Farmer's Library and Monthly Journal of Agriculture; and for twenty-four blooms of seedling dahlias, exhibited on the 11th of October, Brown's Trees of America.

Gerhard Schmitz, Philadelphia, for the best 24 seedling dahlias, exhibited October the 11th. A silver medal.

Charles Moore, 98th street, Third Avenue, for fine specimens of dahlias, frequently renewed. Hovey's Magazine of Horticulture; for several varieties of cut flowers, tastefully arranged in flower stands of rustic work, and frequently renewed, Downing's Horticulturist; and for the best 24 varieties of roses, exhibited October 11th, a silver medal.

Matheo Donadi, 44th street, Bloomingdale road, for several choice varieties of dahlias. Downing's Horticulturist; for several rare varieties of cut flowers, frequently renewed, Downing's Landscape Gardening; and for 24 fine varieties of roses, exhibited the 11th of October, Transactions of the New-York State Agricultural Society.

J. B. Lenoir, 45th street, Bloomingdale road, for several fine varieties of cut flowers, frequently renewed. Prince's Manual of Roses; and for 24 choice varieties of roses, exhibited October 11th, Brown's Trees of America.

Bernard Kelly, gardener to E. W. Fisk, Brooklyn, for several varieties of dahlias, frequently renewed. The American Flower Garden Directory; for a splendid ornamental design of cut flowers, a silver medal; for several splendid bouquets of choice flowers, Downing's Landscape Gardening; and for a fine assortment of cut flowers, Prince's Rose Manual.

Donald Ross, Hudson, for an ornamental design, tastefully arranged. The Farmer's Library.

Mrs. A. A. Smith, Cottage Place, Warren street, Brooklyn, for three dishes of cut flowers, tastefully arranged and frequently renewed. Bridgeman's Gardener's Assistant; and for several splendid bouquets of choice flowers, Hovey's Magazine of Horticulture.

E. H. Kimball, Flatlands, L. I., Patrick Condon, gardener, for a beautiful ornamental design. Hovey's Magazine of Horticulture.

Isaac Buchanan, 17th street, near Fifth Avenue, for a basket of splendid flowers, tastefully arranged and frequently renewed. American Flower Garden Directory.

J. W. Wood, gardener to P. P. Perit, Bloomingdale, for an ornamental design, frequently replenished. Mrs. Loudon's Ladies' Flower Garden.

Wm. Phelan & sons, 5th street, near Avenue A., for a fine display of dahlias, frequently renewed. American Flower Garden Directory.

Messrs. Boll & Hauser, 50th street, Bloomingdale road, for several varieties of choice dahlias. Bridgeman's Gardener's Assistant.

Samuel M. Cox, 49th street, Bloomingdale road, for a bouquet of flowers, tastefully arranged. Transactions of the American Institute.

Andrew Reid, No. 163, 11th street, for two handsome bouquets of choice flowers. Bridgeman's Florist's Guide.

As I promised to record on the annals of the Institute the names of all contributors to the Floral Department, I hereby acknowledge the receipt of some of the choicest flowers of the season, which were placed at the feet of Flora, the Goddess of Flowers on this interesting occasion.

Splendid varieties of Flowers—From W. S. Carpenter and Peter B. Mead, New-York; E. H. Kimball, Long Island; J. Eltringham, A. Coe, and Cornelius White, New Jersey.

Beautiful Bouquets—From J. M. McCullough and D. Higgins, Long Island; Sarah Jones, of Hudson; Sarah Burrows and Ann Jackson, of Williamsburgh; Mrs. Robinson and Mary Thaden, of Brooklyn, and Mary Butts, Bloomingdale.

FRUITS.

Samuel Walker, Charles Henry Hall, and Thomas Bridgeman, *Judges.*

A. H. Ernst, Spring Garden, near Cincinnati, Ohio—*Apples*, 18 varieties, viz.: Rambo, Pryor's Red, White Pippin, Vandervere Pippin, Gravenstein, Wine Sap, Yellow Bell Flower, Newtown Spitzenburgh, Black Apple, Gloria Mundi, Romanite, Haighen's Spitzenburgh, Golden Russet, Rhode Island Greening, Milam, Fall Queen, Roxbury Russet, Yellow Newtown Pippin. Premium, Hovey's Fruits of America. Three varieties of *Pears*, viz.: Beurre Diel, Beurre Preble, Marie Louise. Bridgeman's Gardener's Assistant.

John W. Bailey, Plattsburgh, N. Y., 11 varieties of apples, viz.: St. Lawrence, Pomme Gris, Fameuse, Reignette a Cole, Roseau, Baltic, and 6 seedlings not named. Downing's Fruits and Fruit Trees of America.

R. Mattison, North Bennington, Vermont, 7 varieties of apples, viz.: Autumn Fruit, Pompequank, Fallings; Winter Fruit, Bottle Greenings, Mattison's Scarlet; three fine seedlings not named. Bridgeman's Gardener's Assistant.

Horticultural Society of Detroit, Michigan, V. G. Barker, agent, 5 varieties of apples, viz.: Pound Sweeting, 20oz. Pippin, Wine Apple, Holland Pippin, Red Gilliflower. Downing's Fruits and Fruit Trees of America.

Hiram Reives, East Camp, Columbia county, a dish of excellent Lady Apples. Kenrick's American Orchardist.

R. L. Pell, Pelham, Ulster county, J. B. Murray, agent, for a basket of choice Newtown Pippin Apples. Gardener's Farmer's Dictionary.

James T. Perkins, Hudson, N. J, for two choice varieties of Native Grapes, viz.: Isabella and Catawba. Silver medal.

R. T. Underhill, Croton Point, for choice specimens of Isabella and Catawba grapes. A silver medal; for 24 extra large quinces, Bridgeman's Gardener's Assistant.

S. T. Jones, New Brighton, for two varieties of fine grapes, viz.: Isabella and Catawba. Downing's Fruits and Fruit Trees of America.

Charles M. Graham, Jr., Content, Harlem Lane, a vine containing several fine bunches of grapes; also, one dish of Isabella grapes. Prince's Treatise on the Vine.

Roswell L. Colt, Paterson, N. J., James Scanlin, Gardener, 12 choice varieties of foreign grapes, viz: Black Hamburgh, Black Damascus, West St. Peter's, Cambridge Botanic Garden, seedling from Black Hamburgh, Muscat Alexandria, Muscat Lunel, Muscat

Blanc, one variety not named. The following were raised in the open air: Black Hamburgh, Black St. Peter's and White Muscadine. A silver medal.

James Galbraith, Newark, N. J., for four superior varieties, viz: Black Hamburgh, Victoria Black Hamburgh, Green Calabria, and one fine seedling. The Farmer's Library.

Wm. Wright, Newark, N. J., John Dukes, Gardener, for 3 varieties of excellent grapes, viz: Black Hamburgh, Golden Chasselas and Muscatel. Bridgeman's Gardener's Assistant.

Edward Classen, 209 Delancy street, for three fine varieties of grapes. Kenrick's American Orchardist.

Wm. H. Hendrickson, Middletown, N. J., for a late variety of fine peaches. Gardner's Farmer's Dictionary.

Wm. H. Schermerhorn, Flushing L. I., for 20 Rose Hill fine seedling freestone peaches. Downing's Fruits and Fruit Trees of America.

Dexter Fairbank, No. 237 West Fourteenth street, for fine specimens of seedling clingstone peaches. Prince's Treatise on Fruits.

Samuel Walker, Roxbury, Mass., pears, 36 varieties, viz: Winter Nelis, Heathcote, Figue, Saint Ghislain, Golden Beurre of Bilboa, Eyewood, Beurre Rance, Duchesse d'Angouleme, Vicar of Winkfield, Louis Philippe, Chaumontel, Gansel's Bergamot, Fondante d'Automne, Van Mon's Leon Leclerc, St. Michael, Catallic, English Bergamot, Thompson's Napoleon, Hacon's Incomparable, Beurre Duval, Flemish Beauty, King Edward, Urbaniste, Beurre Capiaumont and Seckel. Hovey's Fruits of America.

Charles H. Raberg, Totawa, near Paterson, N. J., for 14 fine pears, Duchesse d'Angouleme. Bridgeman's Gardener's Assistant.

L. Prevost, Astoria, L. I., for one dozen fine autumn pears. Kenrick's American Orchardist.

G. H. Campbell, Schenectady, for a dish of seedling plums. Downing's Fruits and Fruit Trees of America.

Obadiah Smith, Monroe, Orange co., N. Y., for 12 fine apple-quinces. Kenrick's American Orchardist.

J. Litchfield, Sand Hill, N. J., for 20 large pear-quinces. Prince's Treatise on Fruits.

Wm. A. Underhill, Croton Point, for fine specimens of apples, quinces and grapes. Brown's Trees of America.

George Woodward, Port Chester, some extra fine bunches of Isabella grapes. Transactions of the American Institute.

Henry Steele, Jersey City, for a basket of fine Isabella grapes. Transactions of the American Institute.

J. P. Haff, Bloomingdale, for fine specimens of grapes, quinces and wine. Bridgeman's Fruit Cultivator's Manual.

A. Coe, Newark. N. J., for fine specimens of late clingstone peaches and Isabella grapes. Transactions of the American Institute.

G. L. Demarest, Williamsburgh, L. I., for 20 late seedling peaches. Bridgeman's Fruit Cultivator's Manual.

Other contributors to this department:

Apples—From John McCorey, John H. Chester, James Outhouse, J. C. Nesbit, T. Van Buskurk and John R. Livingston; one basket of Blood apples from Charles Underhill, Wayne co., N. Y.

Grapes—From Andrew Legget, Matthew Antonides, R. Corey and E. Thompson; six bunches of seedling grapes from J. L. Lewis, of Hoboken, N. J.

Pears—From Samuel G. Pote, G. W. Siero and Levi A. Banker.

Quinces, &c.—From Simeon L. Colburn, George Thompson, R. L. Bennet and J. P. Duncan. One peck of Heath peaches, and 6 vines with strawberries, from James M. Pullen, Highstown, N. J.

Nectarines, &c.—From George Thompson, Sand's Hill, N. J.; and from W. P. Breck, No. 130 Second street, N. Y. A new variety of watermelon, named Mountain Sweet, from Timothy Carhart, Monmouth co., N. J.

CULINARY VEGETABLES.

Isaac Buchanan, Ninian Niven and James Henderson, *Judges*

E. H. Kimball, Flatlands, L. I., Patrick Condon, gardener, twelve long blood beets, twelve turnip-rooted beets, twelve heads of drumhead cabbage, one peck of tomatoes, one peck each of red, white and yellow onions, eight egg plants, nine pumpkins, in three varieties, six heads of red cabbage, twelve roots of celery, twelve parsnips, twelve orange carrots, thirty Spanish peppers, nine squashes, in three varieties, one bunch of martynea, one bunch of horse radish. The above being the choicest assortment of culinary vegetables exhibited on this occasion, is entitled to the silver medal offered. For the best six heads of cape broccoli, Transactions of the American Institute; for the best twelve heads of Savoy cabbage, Transactions of the American Institute; for the best twelve carrots for cattle, American Agriculturist; for the best peck of potatoes for the table, The Monthly Journal of Agriculture.

Roswell L. Colt, Paterson, N. J., Nicholas Friche, gardener, twelve cattle parsnips, twelve white cattle carrots, twelve mangel wurtzel

beets, twelve sugar beets, twelve large turnip beets, twelve Silesia beets, twelve turnip cabbages, three large pumpkins. As the above constituted the largest and best assortment of vegetables for cattle, a silver medal was awarded for them; for the best twelve turnip-rooted beets, Transactions of the American Institute; for twelve fine roots of white solid celery, Transactions of the American Institute; for the best twelve parsnips for the table, Transactions of the American Institute; for a peck of excellent table potatoes, Bridgeman's Gardener's Assistant; for the best peck of potatoes for cattle, Gardner's Farmer's Dictionary; for the best twelve roots of salsify. Transactions of the American Institute.

Bernard Kelly, gardener to E. W. Fisk, Brooklyn, for the best twelve long blood beets, Transactions of the New-York State Agricultural Society; for the best twelve heads of drumhead cabbage, Transactions of the New-York State Agricultural Society; for the best peck of red onions, American Agriculturist; for the best peck of white onions, Bridgeman's Gardener's Assistant; for the best peck of yellow onions, New-York Farmer and Mechanic; for several varieties of choice vegetables, Brown's Trees of America.

James F. O'Rourke, Garden Vale, N. J., for the best twelve sugar beets, New-York Farmer and Mechanic; for the best twelve mangel wurtzel beets, American Agriculturist; for the best six egg plants, Gardner's Farmer's Dictionary; for the best twelve parsnips for cattle, Transactions of the New-York State Agricultural Society; for the best three squashes, American Agriculturist; for the best peck of Russia turnips, a volume of the Cultivator.

John Brill, Harsimus, N. J., for the best twelve carrots for the table, New-York Farmer and Mechanic; for the best twelve roots of white solid celery, Transactions of the New-York State Agricultural Society; for eight varieties of seedling potatoes, the Farmer's Library.

Peter Wyckoff, Bushwick, L. I., for the best three cheese pumpkins. New-York Farmer and Mechanic.

M. R. McGarrity, Hoboken, N. J., for the best three cattle pumpkins, averaging 200 lbs. each. American Agriculturist.

G. C. Schanck, Pompton Plains, N. J., for the best and largest pumpkin, weight 210 lbs. Bridgeman's Gardener's Assistant.

Walter F. Williams, Bull's Ferry, N. J., for one large Valparaiso squash, a volume of the Cultivator.

J. W. Wood, Bloomingdale, for the best half peck of tomatoes. New-York Farmer and Mechanic.

James Angus, gardener to James McCullough, for the best peck of white flat turnips, Bridgeman's Gardener's Assistant; for several

choice varieties of culinary vegetables, Transactions of the American Institute.

S. T. Jones, New Brighton, St. I., James Kennedy, gardener, for the best peck of yellow Aberdeen turnips. New-York Farmer and Mechanic.

James Davison, gardener to Mr. Waldron, Bloomingdale, for six large pumpkins and three fine squashes. Trans. N. Y. S. Ag. Soc.

William Kent, Prospect Hill, Brooklyn, for a peck of Williamson potatoes, (a variety lately introduced from New Grenada, South Am.) Trans. of the Am. Inst.

George Boyce, Middle Village, L. I., for four fine varieties of culinary vegetables. Trans. N. Y. State Ag. Soc.

Daniel Cushman, English Neighborhood, for an extra large pumpkin, and two varieties of corn. Transactions of the Am. Institute.

Other contributions to this department:—Celery, (extra fine,) sent in too late to be placed in competition against that of early exhibitors, from Charles Williams and James Gibson, Communipaw, N. J. Cucumbers, peppers and corn, from Alex. Pabor, Harlem. Egg plants and corn, from W. Struckman, Striker's Bay. A bushel of fine potatoes, from J. J. Davis, Flatbush, L. I. Two cream pumpkins, from Charles S. Miller, Harlem. One South American squash, from J. W. Gregory, Tompkinsville, S. I. Patagonian gourds, from C. Fabush, Alex. Brown, and W. Sommers, of New-York.

AGRICULTURAL PRODUCTIONS.

Thomas Bell, Nicholas Wyckoff, and Peter H. Brink, *Judges.*

David S. Mills, Newtown, L. I., for eight varieties of superior Indian corn. A silver medal.

E. H. Kimball, Flatlands, for five fine varieties of Indian corn. Trans. N. Y. State Ag. Soc. For a bushel of superior wheat, Washington's Agricultural Correspondence.

Cornelius S. Smith, Nyack, Rockland County, for forty ears of superior white Indian corn. Coleman's European Agriculture.

James Angus, gardener to James McCullough, for forty ears of superior yellow Indian corn. Washington's Letters on Agriculture.

Henry A. Field, Poughkeepsie, for forty ears of superior brown corn. Washington's Letters on Agriculture; for a bushel of fine rye, Washington's Agricultural Correspondence.

Patrick Dermody, Long Island, for the best bushel of wheat, weight 64 lbs. 12 ounces. Silver medal.

George Nesbit, Hobart, Delaware County, N. Y., for a bushel of superior barley oats. Silver medal.

S. T. Jones, New Brighton, St. I., James McKennan, farmer, for a bushel of very fine oats. Washington's Agricultural Correspondence.

Roswell L. Colt, Paterson, N. J., for a bushel of superior buckwheat. Coleman's European Agriculture.

James Wheedon, Newtown, L. I., for a bushel of very good buckwheat. Transactions of the N. Y. State Ag. Soc.

French and Heiser, Castle Garden, for a fine specimen of Egyptian corn, raised on Mr. Heiser's farm. Transactions of the American Institnte.

Additional contributors to this department—T. C. and A. F. Munn, Orange, New-Jersey, one bushel of white bearded wheat, one bushel of flint wheat. S. Vanvolkenburgh, Harlem, forty ears of yellow corn. Thomas Ash, Throg's Neck, Westchester co., forty ears of Indian corn. Samuel S. Aymour, Jamaica, L. I., one bushel of wheat and one bushel of rye. Rufus K. Delafield, Staten Island, forty ears of white flint corn. North American Phalanx, Monmouth co., N. J., several fine ears of fourteen row corn, and some fine Carolina potatoes. J. S. Hoyt, Brooklyn, an ornamental star, made of fancy corn. George Chesterman, Harlem, forty ears of yellow mammoth corn. Jeremiah Youmens, Bull's Ferry, fifteen ears of extra large white corn.

DAIRY PRODUCTIONS.

Abm. Leggett, Jesse K. Weeks, Charles M. Carpenter, Thomas N. Sutton, Peter Coutant and H. M. Carpenter, *Judges.*

James M. Mulford, Orange co., for a pail of delicious flavored butter. A silver cup.

James Lewis, Goshen, Orange co., for a pail of excellent butter. A silver medal.

Henry Smith, Goshen, Orange co., for a pail of superior butter. Trans. N. Y. State Ag. Soc.

J. Holbert, Chemung, Chemung co., for a pail of fine family butter. Trans. of the American Institute.

M. L. Thompson, Goshen, Orange co., for a pail of fine flavored butter. Trans. of the American Institute.

H. Burrel, Herkimer co., Agents No. 15 Front street, for the best American dairy cheese. A silver cup.

P. W. Stebbins, Herkimer co., Agents No. 15 Front street, for a delicious flavored cheese. A silver medal.

J. Hamlin, Herkimer co., for an excellent cheese, (American Dairy). A silver medal.

H. Fox, Herkimer co., for a fine flavored cheese, (American Dairy). Trans. N. Y. State Ag. Soc.

William Shultz, Clinton Market, for the best imitation English cheese. A silver medal.

R. Musson, Otsego co., Ward and Cady, agents, No. 207 Washington street, for an agreeable flavored imitation English cheese. Trans. N. Y. State Ag. Soc.

Wm. H. Leach, Chenango co., N. Y., for the best pine apple cheese, Henry Carter, agent, No. 3 Front street. Silver medal.

Hyslop and Coffin, No. 43 Front street, N. Y., for a box of fine family pine apple cheese. Trans. N. Y. State Ag. Soc.

A. E. Austin, Austinburgh, St. John and Osburn, and James Stone, all of Ashtabula co., State of Ohio, for fine quality American dairy cheeses, two of which weighed 1,133 lbs., and three others 690 lbs., which from being firm and well made, will improve by age. To each dairy a copy of Colman's European Agriculture, with embellished Diplomas, testimonials to which they are justly entitled for their patriotic enterprise.

We are informed by the agents, Messrs. Wallace and Wickes, No. 32 Front street, that the freight bill and other expenses attending the Ohio cheese (from being brought here by express) was over sixty dollars, and also that Messrs. St. John & Osburn have made, up to this time, 21,000 lbs. of prime cheese, which meets a ready sale.

Other productions of the Dairy:

Butter—From Richard Kimball, Lebanon, New Hampshire; John Thew, Miriam Smith, Abm. Vail and Daniel Jessup, all of Orange county.

Cheese—R. C. Nodine, Cartwright, Harrison & Co., R. Plummer and Samuel Perry, all of Front street; Morrison & Hyde, 278 Washington street, and T. L. Hart, West Cromwell, Connecticut. The judges pronounced all the specimens produced on this occasion as creditable to the makers, being better than is usually sold at our retail stores.

FLOUR AND MEAL.

Stephen Valentine, John Munson, and J. W. Norton, *Judges.*

For a barrel of superexcellent flour, branded Whitney, Rochester, James M. Hoyt & Son, 176 Washington street, agents. A silver medal.

For a barrel of excellent superfine flour (nearly equal), branded John Rice's Mill, Genesee, from 109 Broad street, N. Y. A silver medal.

For a barrel of choice superfine flour, branded A. E. Harman, Genesee, N. H. Wolfe, No. 17 South street, agents. Trans. N. Y. State Ag. Soc.

For a barrel of extra superfine flour, branded Castalia Mills, Ohio, from Marshall, Burton & Co., D. Johnson, agent. Trans. N. Y. State Ag. Soc.

For superior buckwheat meal, from Cromwell & Birdsall, No. 209 Front street. Trans. Am. Inst.

For a barrel of extra fine kiln-dried Indian meal, from Francis Stewart, No. 64 Dey-street. A silver medal.

For a barrel of kiln-dried Indian meal (very fine), from Barnett & Biddleman, 64 Dey-street. Trans. Am. Inst.

Flour was also entered by each of the following agents—Downs & Carey; Bigelow, Munn & Taylor; Herrick & Van Boskerck; Yelverton & Fellows; D. Johnson, C. Fleming, H. Leeland, Clark & Coleman, Bogart & Muir, Charles Olmstead, S. Walker, and J. R. Smith.

HOPS.

George Kitching and W. B. Miles, *Judges.*

Darius Bergen, Orionta, Otsego co., for one bale of superior hops. A silver medal.

WINE.

Charles Henry Hall and S. A. Willoughby, *Judges.*

Charles A. Peabody, Columbus, Geo., for a bottle of wine from native grapes, found on the bank of the Uchee creek, Russell co., Alabama. A silver cup.

Extracts from C. H. Hall's Report on Native Wine and Hot-house Grapes.

"The committee would respectfully submit an opinion, that the wine from Alabama has not sufficient flavor, astringency, or body, to resemble Port wine. The wine should be called American Hock wine, as it closely resembles some sort of Hock, in color, strength and flavor. It is sub-acid, and of very pleasant flavor, and the committee is decidedly of opinion that it may safely be recommended as an excellent wine for summer use."

Grapes—From Roswell L. Colt, Paterson, N. J., viz:

1. "Black Hamburgh," raised under glass. The bunches of regular size, well ripened, and of excellent flavor.

2. "Victoria," raised from the seed of the Black Hamburgh, of larger size than the parent vine, but less high in flavor; the color of a lighter shade of purple, and having four large seeds. By cultivation, it is thought this grape may equal the original in flavor, and being larger in size may become, perhaps, more valuable.

3. "Black St. Peter's," of medium size, round, the skin thin and delicate, pulp mellow, juice sprightly, and high flavored. It cannot be too highly recommended to the public.

4. "A Seedling," raised by Mr. Colt, from a seed of the Black Hamburgh, of a pale black color, and size between the parent and the "Victoria;" in shape round, and the bunches of fine size, closely set. The skin is thin and the pulp delicate; has but one or two small seeds in each grape, a matter of value and remarkable. The flavor and delicious juice, place this grape upon an equal elevation with almost any European variety.

5. "Black Damascus," tough skin and of good flavor, but rather austere; it has three seeds. This variety was not equal to those above described.

6. "Nameless," white, tinged with purple, of oval shape, very vinous, and of good sprightly flavor, much like a European grape sometimes seen.

7. "White Muscat of Alexandria," a white grape, handsome bunches, and very large berries. The juice sweet, musky, and of most delicious flavor. The shape is oval, and for beauty, in all respects, will compare with almost any variety of grape.

"The committee unanimously agree that Mr. Colt deserves high commendation for his example in submitting the results of his patriotic exertions, and hope it may stimulate others to go onward in the way of well doing. They would, in an especial manner, call the attention of gentlemen at large, to the fact of No. 4 (in the above list) being a *seedling*, and they think it deserving a *specific name*, after having been submitted for further inspection to agricultural societies out of the city, and of a presentation to the Institute another year, for more mature reflection."

MISCELLANEOUS ARTICLES.

Thomas Bridgeman, W. S. Carpenter and Peter B. Mead, *Judges.*

E. H. Benschoten & Co., 252 Front street, for fourteen glass jars and bottles of pickles and preserves. A diploma.

Daniel Powers, Hudson, N. Y., for one glass jar of plums, in varieties, carefully preserved. Bridgeman's Fruit Cultivator's Manual.

Francis Alden, Boston, Mass., for one bladder of imitation English lard, and a bottle of lard oil. A diploma.

I cannot close this report without briefly alluding to the vast improvement recently effected in Horticulture. Within the memory of the "oldest inhabitant," the varieties of flowers, fruits and vegetables were few in number, and much inferior in quality to what they are at the present time. These improvements have been the result of a deep study of the vegetable economy, combined with great patience and industry in conducting experiments, by some of the most distinguished Horticulturists of modern times; and the number of varieties has now become so extended, that it is really a matter of serious consideration whether some check should not be given to that zealous spirit which would perpetuate new ones, *ad infinitum*, without regard to intrinsic properties. Owing to the facility with which seedling plants can be raised, and the paternal fondness with which people regard their own offspring, new varieties are frequently offered for propagation before their characters have become developed, and instances have been known where this has been done with much parade in respect of fruit which has worse than no character at all.

When the varieties of flowers, fruits and vegetables, were few in number and of inferior quality, it was comparatively an easy matter to produce improved varieties; but even then, the chances of producing new kinds of superior excellence were very small; for improvements of this nature must be the work of time, one variety being a little better than the last, and so on in succession, until a state of great perfection is attained, when the probability of producing a new variety of great intrinsic excellence, and which shall be considered worthy of superceding the finer kinds already known, becomes very small indeed

It has happened that new varieties of fruit have been very confidently recommended to the public by the producers, as possessing every desirable quality, but which, after a fair trial, and the expenditure of considerable sums of money, have been uncerimoniously rejected, as decidedly inferior to many kinds already in cultivation. In short it would appear that there are already too many varieties of some kinds of fruit under cultivation, and we should therefore pause before admitting new kinds which have not been properly tested; lest, by attempting to improve the quality and quantity of our fruits, we should retrograde rather than advance toward perfection in Horticulture. And the same remark will hold good of the indiscriminate distribution of grafts and buds, of which we have no means of forming a correct judgment as respects their characters.

Mr. A. J. Downing, in his popular work, entitled "The Fruits and Fruit Trees of America," very justly observes, that "the novice plants and carefully watches his hundred seedling Pippins, to find at last, perhaps, ninety-nine worthless or indifferent apples. It appears to him a lottery, in which there are too many blanks to the prizes. He therefore WISELY resorts to the more certain mode of grafting from WELL KNOWN and esteemed sorts."

These remarks are not intended to discourage the distribution of choice grafts and buds which have been properly tested by judicious and experienced Horticulturists, but that inconsiderate spirit which would accept every thing offered, *merely* because it is *new*.

In conclusion, I must confess that I feel an honest pride in being able to report so favorably of the Twentieth Annual Fair, which, when contrasted with the first I superintended, seven years ago, is as a full honey-comb to a single cell. My age and infirmity forbid me to promise much for the future; I trust, however, that if I am not spared another year, you will find a subtitute, who, like the "busy bee," will, after luxuriating on the sweets of the garden, enter your National Hive, and afford gratifying proofs of his industry. Future generations will thus be stimulated to exertion and diligence in the cause of Terraculture, until its importance is acknowledged and its influence is felt throughout the extent of our confederation.

All which is respectfully submitted,

By your faithful friend,

THOMAS BRIDGEMAN.

New-York, November 1, 1847.

LIST OF PREMIUMS

AWARDED BY THE MANAGERS OF THE TWENTIETH ANNUAL FAIR OF THE AMERICAN INSTITUTE, OCTOBER, 1847.

AGRICULTURAL AND HORTICULTURAL DEPARTMENT.

THOROUGH BRED, BLOOD, AND GRADE HORSES

Henry Booth, Morrisania, N. Y., for the best thorough bred stallion. (Trustee). Silver cup.

George M. Patchen, Brooklyn, L. I., for the best trotting stallion of high blood. Silver cup.

Lawrence Devoe, Elizabethtown, N. J., for the second best thorough bred stallion. (Flying Childers.) Silver cup.

Jacob N. Blakeslee, Watertown, Conn., for the best stallion for all farming purposes. Silver cup.

William Stevens, Rahway, N. J., for the second best horse for all farming purposes. Silver medal.

MATCHED HORSES.

Edwin Hoyt, corner of Fifteenth street and Fifth Avenue, for the best pair of matched coach horses. Silver cup.

Robert M. Blackwell, Astoria, L. I., for the second best pair of matched horses. Silver cup.

F. A. Putnam, 474 Broadway, for the third best pair of matched horses. Silver medal.

Jonathan Thorne, 3 Washington Square, for a pair of iron grey horses. Silver medal.

Chas. Bathgate, Morrisania, for the best pair of farm horses. Silver cup.

Roswell L. Colt, Paterson, N. J., for the second best pair of farm horses. Silver medal.

MULES.

Daniel Abbott, Brooklyn, L. I., for the best pair of mules. Silver cup.

David S. Mills, Newtown, L. I., for the second best pair of mules. Silver medal.

FULL BRED STOCK.

Thos. Bell, Morrisania, N. Y., for the best Durham bull. Silver cup.

W. K. Townsend, New Haven, Conn., for the best Durham bull calf. Silver medal.

Thos. Bell, Morrisania, N. Y., for the best Durham cow. Silver cup.

John A. Pool, New Brunswick, N. J., for the best Durham heifer. Silver cup.

Roswell L. Colt, Paterson, N. J., for the best Devon bull. Silver cup.

Jacob N. Blakeslee, Watertown, Conn., for the best Devon cow. Silver cup.

Jacob N. Blakeslee, Watertown Conn., for the best Devon heifer. Silver cup.

Jacob N. Blakeslee, Watertown Conn., for the best Devon bull calf. Silver medal.

Roswell L. Colt, Paterson, N. J., for the best Devon heifer calf. Silver medal.

Roswell L. Colt, Paterson, N. J., for the best Alderney bull. Silver cup.

Roswell L. Colt, Paterson, N. J., for the best Alderney cow. Silver cup.

Roswell L. Colt, Paterson, N. J., for the best Alderney bull calf. Silver medal.

Roswell L. Colt, Paterson, N. J., for the best Alderney heifer calf. Silver medal.

Roswell L. Colt, Paterson, N. J., for the best Alderney heifer. Silver cup.

Morgan Colt, Paterson, N. J., for the best Ayrshire bull. Silver cup.

NATIVE STOCK.

Thos. Bell, Morrisania, N. Y., for the best cow. Silver cup.

Joseph Clowes, Harsimus, N. J., for the best heifer. Silver medal.

Lewis G. Morris, Fordham, N. Y., for the best bull calf. Silver medal.

GRADE STOCK.

James Bathgate, Fordham N. Y., for the best two year old bull. Silver cup.

Daniel D. Denise, Freehold, N. J., for the best bull calf. Silver medal.

Lewis G. Morris, Fordham, N. Y., for the best cow. Silver cup.

Thos. Bell, Morrisania, N. Y., for the best one year old heifer. Silver medal.

Lewis G. Morris, Fordham, N. Y., for the best heifer calf. Silver medal.

Jacob Lorillard, Westchester, N. Y., for the best two year old heifer. Silver medal.

WORKING OXEN.

Jacob N. Blakeslee, Watertown, Conn., for the best pair of working oxen. Silver cup.

Pliny Goold, East Nassau, N. Y., for the second best pair of working oxen. Silver medal.

Jacob N. Blakeslee, Watertown, Conn., for the best team of oxen, six yoke. Twenty-five dollars.

FAT CATTLE AND SHEEP.

Sidney Wills, New Hartford, N. Y., for the best fat ox. Silver medal.

Thos. Bell, Morrisania, N. Y., for the best pair of fat cattle. Silver cup.

Edward Hallock, Milton, Ulster co., N. Y., for the best fat sheep. Silver cup.

SHEEP.

Obadiah Elliot, Middleham Union, N. J., for the best Southdown buck. Silver cup.

John Wait, Coldenham, Orange co., N. Y., for the best Southdown ewes. Silver cup.

John Wait, Coldenham, Orange co., N. Y., for the best Southdown lambs. Silver medal.

Peter Pirnie, East Chester, Westchester co., N. Y., for the best Leicester ram. Silver cup.

Thos. Bell, Morrisania, N. Y., for the best long wool ewes. Silver cup.

Thos. Bell, Morrisania, N. Y., for the best long wool lambs. Silver medal.

James L. Randall, Lysander, Onondaga co., N. Y., for the best Spanish Merino buck. Silver cup.

Hiram Whitlock, North Salem, N. Y., for the best Saxon Merino buck. Silver cup.

Hiram Whitlock, North Salem, Westchester co., N. Y., for the best Saxon Merino ewes. Silver cup.

Joseph Blakeslee, North Salem, N. Y., for the best Spanish Merino ewes. Silver cup.

SWINE.

William Stickney, Boston, Mass., for the best boar. Silver cup.

M. Eels, Twenty-sixth street, for the second best boar. Diploma.

Samuel Love, Fifty-third street, for the best sow. Silver cup.

Samuel W. Benedict, jr., Richmond co., N. Y., for the second best sow. Diploma.

Edward Wait, Montgomery co., N. Y., for the best shote. Silver medal.

Edward Wait, Montgomery co., N. Y., for the best lot of pigs. Silver cup.

Samuel Love, Fifty-third street, for two fat hogs. Silver medal.

Henry Delafield, Yorkville, N. Y., for a lot of China pigs. Silver medal.

William Stickney, Boston, Mass., for a Suffolk sow, imported shotes and Suffolk pigs. Silver medal.

POULTRY.

William Thompson, Twenty-third street, for a pair of fowls, a cross of pheasant and game. Trans. Am. Inst.

Roswell L. Colt, Paterson, N. Y., for the best pair of white turkeys. Trans. N. Y. State Ag. Soc.

Roswell L. Colt, Paterson, N. J., for the best white Guinea hens. Trans. N. Y. State Ag. Soc.

Roswell L. Colt, Paterson, N. J., for the best Muscovy ducks. Trans. N. Y. State Ag. Soc.

Roswell L. Colt, Paterson, N. J., for the best Malay fowls. Trans. N. Y. State Ag. Soc.

Roswell L. Colt, Paterson, N. J., for the best Jersey blue fowls. Trans. N. Y. State Ag. Soc.

L. H. Martin, Paterson, N. J., for the best silver Spanish pheasants. Trans. N. Y. State Ag. Soc.

L. H. Martin, Paterson, N. J., for the best Creole fowls. Trans. N. Y. State Ag. Soc.

L. H. Martin, Paterson, N. J., for the best black Poland fowls. Trans. N. Y. State Ag. Soc.

L. H. Martin, Paterson, N. J., for the best golden pheasants Trans. Am. Inst.

Robert Bolden, Fort Lee, N. J., for the best hen, (called the every day hen). Trans. N. Y. State Ag. Soc.

SHEPHERD DOGS.

Henry A. Field, Third Avenue, for the best shepherd dog. Farmer's Library.

FARMS.

Richard & John Cooper, Bushwick, L. I., for the best farm of thirty acres. Silver cup.

Thomas Bell, Morrisania, N. Y., for the best farm of four hundred acres. Silver cup.

AGRICULTURAL PRODUCTIONS.

David S. Mills, Newtown, L. I., for the best Indian corn, seven varieties. Silver medal.

E. H. Kimball, Flatlands, L. I., Patrick Condon, gardener, for five varieties of good Indian corn. Trans. N. Y. State Ag. Soc.

Cornelius T. Smith, Nyack, Rockland co., N. Y., for forty ears of superior white Indian corn. Colman's European Agriculture.

James McCullough, James Angus, gardener, for forty ears of superior yellow corn. Washington's Letters on Agriculture.

Henry A. Field, Poughkeepsie, N. Y., for forty ears of superior brown corn. Washington's Letters on Agriculture.

Patrick Dermody, Long Island, for the best bushel of "Bergen" wheat, (64¾ lbs.) Silver cup.

E H. Kimball, Flatlands, L. I., Patrick Condon, gardener, for a bushel of superior wheat, (64 lbs. 8 oz.) Washington's Agricultural Correspondence.

Henry A. Field, Poughkeepsie, N. Y., for a bushel of fine rye. Washington's Agricultural Correspondence.

George Nesbit, Hobert, Delaware County, N. Y, for a bushel of superior barley oats. Silver medal.

S. T. Jones, New Brighton, S. I., James McThennen, farmer, for a bushel of fine oats. Washington's Agricultural Correspondence.

Roswell L. Colt, Paterson, N. J., Nicholas Friche, farmer, for a bushel of superior buckwheat. Colman's European Agriculture.

James Wheeden, Newtown, L. I., for a bushel of very good buckwheat. Trans. N. Y. State Ag. Soc.

French & Heiser, Castle Garden, for a fine sample of Egyptian corn. Trans. of American Institute.

FLOUR AND MEAL.

John Rice, Genesee, N. Y., for a barrel of superior flour. Silver medal.

James M. Hoyt & Son, 176 Washington-street, for a barrel of super-excellent flour, (branded "Whitney," Rochester.) Silver medal.

A. E. Harmon, Genesee, N. H. Wolfe, agent, 17 South street, for a barrel of superior flour. Trans. N. Y. State Ag. Soc.

Marshall, Burton & Co., 104 Broad street, for a barrel of extra-superfine flour, (Castalia mills, Ohio.) Trans. N. Y. St. Ag. Soc.

Cromwell & Birdsall, 209 Front street, for a sample of superior buckwheat flour. Diploma.

Franks & Stewart, Port Colden, N. J., for a barrel of extra fine Indian meal. Silver medal.

Barnet and Biddleman, 64 Dey street, for a barrel of kiln dried Indian meal. Trans. Am. Ins.

HOPS.

Darius Bergen, Orionta, Otsego County, N. Y., for the best bale of hops. Silver medal.

PRODUCTS OF THE DAIRY.

J. M. Mulford, Orange Co., N. Y., C. M. Carpenter & Co., agents, 468 Pearl-street, for a specimen of delicious flavored butter. Silver cup.

James Lewis, Goshen, Orange Co., N. Y., for a pail of excellent butter. Silver medal.

Henry Smith, Goshen, Orange Co., N. Y., for a pail of superior butter. Trans. N. Y. State Ag. Soc.

J. Holbert, Chemung Co., N. Y., for a sample of fine family butter. Trans. American Institute.

M. L. Thompson, Goshen, Orange Co., N. Y., for a pail of fine flavored butter. Trans. American Institute.

H. Burrell & Co., 15 Front street, for the best American dairy cheese. Silver cup.

P. W. Stebbins, 15 Front street, for a delicious flavored cheese. Silver medal.

J. Hamlin, Herkimer Co., N. Y., for an excellent American dairy cheese. Silver medal.

H. Fox, Herkimer Co., N. Y., Samuel Wallace, agent, 3 Front street, for a fine flavored cheese. Trans. N. Y. State Ag. Soc.

W. E. Shultz, Clinton Market, for the best imitation English cheese. Silver medal.

R. Musson, Otsego Co., Ward & Cady, agents, 207 Washington street, for an agreeable flavored imitation English cheese. Trans. N. Y., State Ag. Soc.

W. H. Leach, Chenango Co., N. Y., Henry Carter, agent, 3 Front street, for the best pineapple cheese. Silver medal.

Hyslop & Coffin, 43 Front street, for a box of fine family pine-apple cheese. Trans. N. Y. State Ag. Soc.

James Stone, Ashtabula Co., Ohio, for a fine American dairy cheese (575 lbs.) Colman's European Agriculture.

St. John & Osborn, Morgan, Ashtabula Co., Ohio, for fine American dairy cheese. Colman's European Agriculture.

A. E. Austin, Austinburgh, Ohio, Wallace & Wickes, agents, 32 Front street, for cheese of fine quality. Colman's European Agriculture.

Two of the cheeses from Ohio weighed 1188 lbs., and three others 690 lbs.

NATIVE WINE.

Charles A. Peabody, Columbus, Ga., for a bottle of wine from native grapes found on the banks of the Uchee Creek, Russell County, Alabama. Silver cup.

FRUIT.

A. H. Ernst, Cincianati, Ohio, for eighteen choice varieties of apples. Hovey's Fruits of America.

J. W. Bailey, Plattsburgh, N. Y., for eleven varieties of excellent apples. Downing's Fruits and Fruit trees of America.

R. Mattison, North Bennington, Vt., for seven varieties of superior apples. Bridgeman's Gardener's Assistant.

The Horticultural Society of Detroit, Michigan, for five varieties of extra large apples. Downing's Fruits and Fruit Trees of America.

Hiram Reives, East Camp, Columbia Co., N. Y., for a dish of fine lady apples. Kenrick's American Orchardist.

Robert L. Pell, Pelham, Esopus, Ulster Co., N. Y., for a basket of excellent Newtown pippins. Gardner's Farmer's Dictionary.

James T. Perkins, Hudson, N. Y., for two choice varieties of native grapes, Isabella and Catawba. Silver medal.

R. T. Underhill, Croton Point, N. Y., for choice specimens of Isabella and Catawba grapes. Silver medal.

S. T. Jones, New Brighton, S. I., for two fine samples of native grapes. Downing's Fruits and Fruit Trees of America.

Charles M. Graham, Jr., Content, Harlem Lane, for several fine bunches of Isabella grapes. Prince's Treatise on the Vine.

Roswell L. Colt, Paterson, N. J., for twelve choice varieties of foreign grapes. Silver medal.

James Galbraith, Newark, N. J., for four superior varieties of hot-house grapes. Farmer's Library.

William Wright, Newark, N. J., for three excellent varieties of hot-house grapes. Bridgeman's Gardener's Assistant.

Edward Classen, 219 Delancy street, for two varieties of foreign, and one of native grapes. Kenrick's American Orchardist.

W. H. Hendrickson, Middletown, N. J., for a variety of fine late peaches. Gardner's Farmer's Dictionary.

W. H. Schermerhorn, Rose Hill, Flushing, L. I, for twenty Rose Hill seedling freestone peaches. Downing's Fruits and Fruit Trees of America.

Dexter Fairbank, 237 Fourteenth street, for fine specimens of seedling clingstone peaches. Prince's Treatise on Fruits.

Samuel Walker, Roxbury, Mass., for thirty-six choice varieties of pears. Hovey's Fruits of America.

A. H. Ernst, Cincinnati, Ohio, for three choice varieties of pears. Bridgeman's Gardener's Assistant.

Charles H. Raberg, Paterson, N. J., for fourteen fine pears, "Duchesse d'Angouleme." Bridgeman's Gardener's Assistant.

L. Prevost, Astoria, Long Island, for twelve five autumn pears. Kenrick's American Orchardist.

G. H. Campbell, Schenectady, N. Y., for a dish of seedling plums. Downing's Fruits and Fruit Trees of America.

R. T. Underhill, Croton Point, N. Y., for twenty-four extra large quinces. Bridgeman's Gardener's Assistant.

Obadiah Smith, Munroe, Orange co., N. Y., for twelve fine apple quinces. Kenrick's American Orchardist.

J. Liftchild, Sand Hill, N. J., for twenty large pear quinces. Prince's Treatise on Fruits.

William A. Underhill, Croton Point, N. Y., for fine specimens of apples, quinces and grapes. Browne's Trees of America.

George Woodward, Port Chester, N. Y., for some extra fine bunches of Isabella grapes. Trans. Am. Inst.

J. P. Haff, Bloomingdale, N. Y., for fine specimens of grapes and quinces. Bridgeman's Fruit Cultivator's Manual.

Henry Steele, Jersey City, N. J., for a basket of fine Isabella grapes. Trans. Am. Inst.

A. Coe, Newark, N. J., for fine specimens of clingstone peaches and grapes. Trans. Am. Inst.

G. L. Demarest, Williamsburgh, L. I., for twenty-two seedling peaches, (sound middle of October.) Bridgeman's Fruit Cultivator's Manual.

FLOWERS.

G. C. Thorburn, Astoria, L. I., for several choice varieties of the dahlia, renewed during the Fair. Silver cup.

Dunlap & Thomson, 635 Broadway, for a rich display of dahlias, frequently renewed the first two weeks of the Fair. Silver medal.

L. Prevost, Astoria, L. I., for a large display of dahlias, renewed during the Fair. Far. Lib. and Monthly Jour. of Agriculture.

Matthew Donadi, corner of Forty-fourth street and Bloomingdale Road, for several varieties of dahlias. Downing's Horticulture.

Charles Moré, Ninety-eighth street, corner Third Avenue, for fine specimens of dahlias, frequently renewed. Hovey's Magazine of Horticulture.

E. W. Fisk, Brooklyn, L. I., for several varieties of dahlias, frequently renewed. American Flower Garden Directory

Wm. Phelan & Sons, cor. Avenue A and fifth street, for a display of choice varieties of dahlias. Mrs. Loudon's Ladies' Flower Gard.

D. Boll, Fiftieth street, corner Bloomingdale Road, for several varieties of choice dahlias. Bridgeman's Gardener's Assistant.

E. W. Fisk, Brooklyn, L. I., for a splendid ornamental design of cut flowers. Silver medal.

Donald Ross, Hudson, N. Y., for an ornamental design, tastefully arranged. Farmer's Library.

E. H. Kimball, Flatlands, L. I., for a beautiful ornamental design. Hovey's Magazine of Horticulture.

J. W. Wood, Bloomingdale, N. Y., for an ornamental design, frequently replenished. Mrs. Loudon's Ladies' Flower Garden.

Charles Moré, corner Ninety-eighth street and Third Avenue, for a variety of choice roses and cut flowers, tastefully arranged and frequently renewed during the Fair. Downing's Horticulturist.

Matthew Donadi, corner of Forty-fourth street and Bloomingdale Road, for several choice varieties of cut flowers. Downing's Landscape Gardening.

Isaac Buchanan, Seventeenth street near Fifth Avenue, for a fancy basket of cut flowers, tastefully arranged and frequently renewed. American Flower Garden Directory.

J. B. Lenoir, corner Forty-fifth street and Bloomingdale Road, for several varieties of choice roses. Prince's Manual of Roses.

A. A. Smith, Cottage Place, Brooklyn, L. I., for a good supply of cut flowers in variety. Bridgeman's Gardener's Assistant.

E. W. Fisk, Brooklyn, L. I., for a fine assortment of flowers, frequently renewed. Prince's Manual of Roses.

A. A. Smith, Cottage Place, Brooklyn, L I., for several splendid bouquets of flowers. Hovey's Magazine of Horticulture.

E. W. Fisk, Brooklyn, L. I., for bouquets of flowers, frequently renewed. Downing's Landscape Gardening.

Samuel M. Cox, corner Forty-ninth street and Bloomingdale Road, for a bouquet of flowers, tastefully arranged. Trans. Am. Inst.

Andrew Reid, 163 Eleventh street, for two handsome bouquets of choice flowers. Bridgeman's Florist's Guide.

Charles Moré, corner Ninety-eighth street and Third Avenue, for the best twenty-four varieties of roses. Silver medal.

J. B. Lenoir, corner Forty-eighth street and Bloomingdale Road, for a beautiful display of roses, twenty-four varieties. Browne's Trees of America.

Matthew Donadi, cor. Forty-fourth street and Bloomingdale Road, for a fine lot of roses, twenty-four varieties. Trans. N. Y. S. Ag. Society.

Dunlap & Thomson, 635 Broadway, for the best twenty-four varieties of dahlias. Silver medal.

G. C. Thorburn, Astoria, L. I., for a superb display of dahlias, twenty-four varieties. Browne's Trees of America.

Gerhard Schmitz, Philadelphia, for the best twenty-four blooms of seedling dahlias. Silver medal.

L. Prevost, Astoria, L. I., for twenty-four fine blooms of seedling dahlias. Browne's Trees of America.

VEGETABLES.

E. H. Kimball, Flatlands, L. I., P. Condon, gardener, for the choicest assortment of culinary vegetables. Siver medal.

Roswell L. Colt, Paterson, N. J., Nicholas Friche, gardener, for the best and greatest variety of vegetable roots for cattle. Silver medal.

E. W. Fisk, Brooklyn, L. I., B. Kelly, gardener, for the best 12 long blood beets. Trans. N. Y. State Ag. Soc.

Roswell L. Colt, Paterson, N. J., for the best twelve turnip-rooted beets. Trans. Am. Inst.

James F. O'Rourke, Garden Vale, N. J., for the best twelve sugar beets. N. Y. Farmer and Mechanic.

James F. O'Rourke, Garden Vale, N. J., for the best twelve mangel-wurtzel beets. American Agriculturist.

E. H. Kimball, Flatlands, L. I., for the best six heads of Cape broccoli. Trans. Am. Inst.

E. W. Fisk, Brooklyn, L. I., for the best twelve heads of drumhead cabbage. Trans. N. Y. State Ag. Soc.

E. H. Kimball, Flatlands, L. I., for the best twelve heads of Savoy cabbage. Trans. Am. Inst.

John Brill, Harsimus, N. J., for the best twelve carrots for the table. N. Y. Farmer and Mechanic.

E. H. Kimball, Flatlands, L. I., for the best twelve carrots for cattle. American Agriculturist.

John Brill, Harsimus, N. J., for the best twelve roots of white solid celery. Trans. N. Y. State Ag. Soc.

Roswell L. Colt, Paterson, N. J., for twelve fine roots of giant celery. Trans. Am. Inst.

James F. O'Rourke, Garden Vale, N. J., for the best six egg plants. Gardner's Farmers' Dictionary.

E. W. Fisk, Brooklyn, L. I., for the best peck of white onions. Bridgeman's Gardener's Assistant.

E. W. Fisk, Brooklyn, L. I., for the best peck of yellow onions. N. Y. Farmer and Mechanic.

E. W. Fisk, Brooklyn, L. I., for the best peck of red onions. American Agriculturist.

Roswell L. Colt, Paterson, N. J., for the best twelve parsnips for the table. Trans. Am. Inst.

James F. O'Rourke, Garden Vale, N. J., for the best twelve parsnips for cattle. Trans. N. Y. State Ag. Soc.

John Brill, Harsimus, N. J., for eight varieties of seedling potatoes. Farmer's Library.

E. H. Kimball, Flatlands, L. I., for the best peck of potatoes for the table. Monthly Journal of Agriculture.

Roswell L. Colt, Paterson, N. J., for a peck of excellent table potatoes. Bridgeman's Gardeners' Assistant.

Roswell L. Colt, Paterson, N. J., for the best peck of potatoes for the table. Gardner's Farmers' Dictionary.

Peter Wyckoff, Bushwick, L. I. for the best cheese pumpkins. N. Y. Farmer and Mechanic.

M. A. McGarrity, Hoboken, N. J., for the best three cattle pumpkins. American Agriculturist.

G. C. Schanck, Pompton Plains, N. J., for the best and largest pumpkin (210 lbs). Bridgeman's Gardeners' Assistant.

Roswell L. Colt, Paterson, N. J., for the best twelve roots of salsify. Trans. Am. Inst.

James F. O'Rourke, Garden Vale, N. J., for three superior crook-necked squashes. American Agriculturist.

Walter F. Williams, Bull's Ferry, N. J., for a fine Valparaiso squash. Vol. of the Cultivator.

J. W. Wood, Bloomingdale, N. Y., for half a peck of beautiful red tomatoes. N. Y. Farmer and Mechanic.

James Angus, gardener to James McCullough, for a peck of fine red-top turnips. Bridgeman's Gardeners' Assistant.

James F. O'Rourke, Garden Vale, N. J., for a peck of large Russia turnips. Vol. of the Cultivator.

S. T. Jones, New-Brighton, S. I., for a peck of choice yellow Aberdeen turnips. N. Y. Farmer and Mechanic.

James Davison, Bloomingdale, N. Y., for six large pumpkins and three fine squashes. Trans. N. Y. State Ag. Soc.

William Kent, Prospect Hill, Brooklyn, L. I., for a peck of Williamson potatoes, lately introduced. Trans. Am. Inst.

James Angus, gardener to James McCullough, for several choice varieties of culinary vegetables. Trans. Am. Inst.

George Boyce, Middle Village, L. I., for four fine varieties of culinary vegetables. Trans. N. Y. State Ag. Soc.

Daniel Cushman, English Neighborhood, N. J., for an extra large pumpkin and two varieties of corn. Trans. Am. Inst.

E. W. Fisk, Brooklyn, L. I., for several varieties of choice vegetables. Browne's Trees of America.

MISCELLANEOUS.

Francis Alden, Boston, Mass., J. Howard & Son, agents, 73 South street, for a bladder of imitation English lard, and a bottle of fine lard oil. Diploma.

Daniel Powers, Hudson, N. Y., for one glass jar, containing several varieties of the plum, carefully preserved. Bridgeman's Fruit Cultivators' Manual.

E. H. Van Benschoten & Co., 252 Front street, for fourteen glass jars and bottles of pickles and preserves. Diploma.

AGRICULTURAL IMPLEMENTS.

James R. Stafford, Cleveland, O., for the best machine for drying grain, flour, meal and other substances Gold medal.

David Clark, 549 Bowery, for a model of a machine for cutting up corn. Diploma.

Eddy & Co., A. B. Allen & Co., agents, 187 Water street, for the best thrashing machine. Silver medal.

Ferdinand Woodward, Freehold, N. J., for a thrashing machine. Silver medal.

Palmer & Frost, Poughkeepsie, N. Y., for a vegetable cutter. Diploma.

Palmer & Frost, Poughkeepsie, N. Y., G. W. Guion, agent, 174 West street, for a dog-power churn. Diploma.

Samuel J. Proper, Thirty-first street, and Lexington avenue, for the best fan corn-sheller; B. W. Bean, inventor. Silver medal.

A. B. Allen, & Co., 187 Water street, for the best harrow. Diploma.

Norman Rude, Stapleton, S. I., for a wheelbarrow, with improvements in the wheel. Diploma.

John Jones, Weston, Conn., for an improved curry comb. Silver medal.

Frisbie & Osborn, Rensselaerville, N. Y., for a grain cradle. Diploma.

J. T. Grant & Co., Schagticoke, Rensselaer co., A. B. Allen & Co, agents, 187 Water street, for the best fanning mill. (Silver medal having been before awarded) Diploma.

M. P. Coons, Lansingburgh, N. Y., for the best varieties of farm hurdle, and ornamental fencing. Silver medal.

Jesse Urmy, Wilmington, Del., for the best corn-stalk cutter and grinder. Silver medal.

George Catchpole, Geneva, N. Y., for the best hand and horse-power stalk and straw cutter. Silver medal.

Samuel J. Proper, Thirty-first street, and Lexington avenue, for an exhibition of agricultural implements, of superior finish. Silver medal.

E. Hart, New-Albany, Indiana, for a cultivator and harrow combined. Diploma.

Hayward A. Harvey, corner Thirty-third street and Third avenue, for a reciprocating hay and straw cutter. Silver medal.

William Hovey, Worcester, Mass., for Hovey's rotary hay and straw cutter. Silver medal.

A. B. Allen & Co., 187 Water street, for an exhibition of agricultural implements. Silver medal.

John Mayher & Co., 195 Front street, for an exhibition of agricultural implements. Silver medal.

TESTING OF PLOUGHS.

John Mayher & Co., 195 Front street, for the best plough (draught 375 lbs.). Silver cup.

B. Myers, Newark, N. J., for the second best plough. Silver medal.

John Moore, for the third best plough. Diploma.

PLOUGHING.

James Clark, for the best ploughing. Silver cup.

Joseph Swannell, for the second best ploughing. Silver medal.

John Brewster, for the third best ploughing. Diploma.

SPADING.

Joseph P. Lodge, for the best spading. Silver cup.

Richard Marry, for the second best spading. Silver medal.

James Wilson, for the third best spading. Diploma.

Manufacturing and Mechanical Department.

BATHS.

Smith, Torrey & Co.. 50 Maiden lane, for the best portable toilet shower bath. Silver medal.

Orion Greene, Boston, Mass., for the second best extension portable shower bath. Diploma.

Smith, Torrey & Co., 50 Maiden lane, for the best plunge bath, with shower attached (copper). Silver medal.

Jordan L. Mott, 264 Water street, for the second best bathing tub (iron). Diploma.

CHURCH BELLS.

Andrew Meneely, Troy, N. Y., for superior church bells. (Gold medal having been before awarded) Diploma.

STRAW, LEGHORN AND OTHER BONNETS.

John Sammis & Co., 86 Delancy street, for the best Pamela and Excelsior bonnets. Silver medal.

James Milward, corner Thirty-first street and Eighth avenue, for the second best Pamela bonnets. Diploma.

Mrs. Catharine Richardson, Medway, Mass., for the best fine split straw bonnets. Silver medal.

A. D. Campbell, 37 Cedar street, for a rice Genevese bonnet. Diploma.

James Sherry, Boston, Mass., for a bonnet. Diploma.

Bradford Frost, 68 William street, for a Coburn bonnet. Diploma.

Clark & Dewing, 92 Houston street, for a split straw bonnet. Diploma.

GENTLEMEN'S BOOTS AND SHOES.

David Mundell, Brooklyn, L. I., for the best fine calf cork-sole boots, and for the best calf double-soled boots. Silver medal.

David Mundell, Brooklyn, L. I., for the best pair of calf skin dress boots. Silver medal.

George Conrad, 27 Merchants' Exchange, for the best patent leather boots. Silver medal.

George Conrad, 27 Merchants' Exchange, for the second best calf skin dress boots. Diploma.

J. Conrad, 5 Ann street, for a pair of embroidered opera boots. Diploma.

Oliver Hutchinson, Fulton street, for excellent neat's leather water boots. Diploma.

LADIES' BOOTS AND SHOES.

David Mundell, Brooklyn, L. I., for the best satin gaiter boots. Silver medal.

P. Laboyteaux, 641 Broadway, for a lady's cork-sole shoe. Silver medal.

BOOKS, BINDING AND STATIONERY.

Harper & Brothers, 82 Cliff street, for the best marble paper. Diploma.

Schultz, Bleidorn & Dejonge, 57 Gold street, for colored paper. Diploma.

Davids & Black, 112 John street, for beautiful specimens of sealing wax. Silver medal.

George F. Nesbit, corner Wall and Water streets, for machine cut wood types. (Silver medal having been before awarded,) Diploma.

R. C. Root & Anthony, 22 William street, for blank books, (superior ruling.) Silver medal.

John C. Kock, 183 William street, for the best specimen of binding. Silver medal.

Samuel Raynor, 76 Bowery, for well bound books. Diploma.

Longbotham & Co., Ulster county, N. Y., for binders' boards, unsurpassed by anything of the kind known to the judges. Silver medal.

J. J. Treat & Co., Honeoye Falls, N. Y., for superior straw boards. Diploma.

Richard Smyth, 322 Front street, for parchment and vellum. Diploma.

Rich & Loutrel, 61 William street, for good manifold writers, handsomely finished. Diploma.

Thomas Wildes & Co., 30 Old Slip, for Hall's hydrostatic ink fountains. Diploma.

Crane & Co., Dalton, Mass., for bank note paper, a very superior article. Silver medal.

Platner & Smith, Lee, Mass, for a beautiful article of writing paper. Silver medal.

J. S. Redfield, Clinton Hall, for drawing tablets. Diploma.

BRUSHES AND DOOR MATS.

McGill & Oliver, 371 Pearl street, for the best hair and cloth brushes. Silver medal.

Wm. Steele & Co., 305 Pearl street, for handsome feather brushes. (Gold medal having been before awarded). Diploma.

J. T. Barnes, 255 Pearl street, for excellent brush door mats. (Silver medal having been before awarded). Diploma.

CABINET WARE.

James Miller, 441 Broadway, for a well made book-case. Silver medal.

James R. Westervelt & Son, 249 Spring street, for an oak centre table. Silver medal.

H. Radford, Brooklyn, L. I., for a mahogany extension dining table. Silver medal.

C. Charles, 442 Broadway, for a fancy rosewood table. Diploma.

John Needham, corner of Thirty-eighth street and Eighth Avenue, for the best principle of a sofa bedstead. Silver medal.

Wm. C. Gardiner, 69 Gold street, for a screw bedstead. (A silver medal having been before awarded). Diploma.

Samuel S. Parker, 156 Greenwich street, for a screw bedstead. Diploma.

Rushton and Co., 110 Broadway, for medicine chests. Diploma.

John Garlick, 94 Fulton street, for well made chronometer cases. Diploma.

John F. Holmes, 86 Delancy street, for a silver-mounted show-case. Diploma.

Robert Glenn, 194 Fulton street, for a mahogany music stand. Diploma.

Z. M. Quimby, 303½ Broadway, for superior work-boxes. Diploma.

J. Corrigan, 83 Hammond street, for an inlaid work-box. Diploma.

H. Miller, 51 Hudson street, for an inlaid work-box. Diploma.

Hugh Brady, 48 Thirteenth street, for a work-box. Diploma.

George S. Henry, 71 Bowery, for a French cottage chair. Diploma.

M. W. King & son, 466 Broadway, for a revolving pivot chair. Diploma.

J. P. Gage, Thirty-seventh street, near Ninth Avenue, for superior specimens of sand-paper. Diploma.

John Whitmore, Brooklyn, L. I., for superior specimens of sand-paper. Diploma.

J. G. Isham, 71 Fulton-street, for superior specimens of sand paper. Diploma.

P. Cartereau, 334 Greenwich-street, for the best specimen of carving. Silver medal.

P. W. Laroza, Brooklyn, L. I., for the second best specimen of carving. Diploma.

John Topf, 243 Bleecker-street, for cane chairs. Diploma.

CAKES AND CONFECTIONARY.

E. Kelly & Co. Brooklyn, L. I., for the best specimen of plum cake. Diploma.

Nathan Raynor, 572 Grand-street, for the second best plum cake. Diploma.

Peter Haas, South William-street, for a beautiful ornamental temple. Diploma.

H. Tateosyan, 52 Third-street, for superior fig paste. Diploma.

Edward Hallock, 84 Chatham-street, for superior crystalized fruit. Diploma.

John Longhurst, for excellent confectionary. Diploma

CARPETING AND OIL CTOTHS.

Palmer & Co., Newark, N. J., for the best specimen of tapestry carpeting. Gold medal.

Thompsonville Manufacturing Company, Thompsonville Conn., for superior Axminster carpeting. Silver medal.

Mrs. McKay, (seventy years of age,) Providence, R. I., for a chenelle rug. Diploma.

Albro Hoyt & Co., Elizabethtown, N. J., for superior specimens of floor oil cloth. Silver medal.

James W. Woodruff, for specimens of oil cloth for table covers. Diploma.

CARRIAGES, SLEIGHS, AND AXLES.

Lawrence Brower, Sixty-fifth street, for the best light wagon. Silver medal.

G. W. Watson, Philadelphia, Penn., for the second best light wagon. Diploma.

Jas. Goold & Co., Albany, N. Y. for the best unpainted sleigh. Diploma.

H. Holliday, Poughkeepsie, N. Y., for an unpainted sleigh. Diploma.

John G. Ostram, Rhinebeck, N. Y., for the best finished sleigh. Diploma.

J. Swenarton, 225 Greene-street, for a well finished tilbury. Diploma.

John Stephenson, Twenty-seventh-street and Fourth Avenue, for an omnibus of superior workmanship. Gold medal.

CLOCKS AND WATCHES.

Forrestville Manufacturing Co., Bristol, Conn. for an equalizing spring clock. Diploma.

Marine Clock Manufacturing Company, New-Haven, Ct., for a marine time-piece. Diploma.

D. Eggert & Son, 239 Pearl-street, for well made chronometers. (Medals having been before awarded.) Diploma.

A. T. Cochrane, 288 Greenwich-street, for a watch movement, new escapement. Silver medal.

V. Giroud, 281 Broadway, for a chronometer regulator. (Gold medal having been before awarded.) Diploma.

Ferdinand Kiddle, 88 Fulton-street, for an astronomical clock. Silver Medal.

CLOTHING.

George W. Simmons, Boston, Mass., for the best men's clothing. Silver medal.

John Craig, 112 William-street, for a pair of pantaloons. Diploma.

S. P. Durando, 78 Bowery, for the best children's and youths' clothing. Silver medal.

E. J. Olssen, 74 Bowery, for the second best children's clothing. Diploma.

Rankin & Ray, 104 Bowery, for knit shirts and drawers. Diploma.

COOPERAGE.

McEwen & Thompson, 55 Goerck-street, for the best specimen of iron bound barrels. Diploma.

J. Dufau, 113 Water-steet, for an imitation brandy cask. Diploma.

COTTON GOODS.

B. S. Walcott, Whitestown, N. Y., Charles Carville, agent, 26 Broad-street, for beautiful specimens of satin jeans. Gold medal.

James' Steam Mills, Newburyport, Mass., F. Skinner & Co., agents, 31 Broad-street, for the best specimen of bleached and brown shirtings, (from No. 40 yarns.) (Gold medal having been before awarded.) Diploma.

Naumkeag Steam Cotton Company, Salem, Mass., F. Skinner & Co., agents, 31 Broad-street, for the best bleached and brown shirtings, (from No. 30 yarn.) Silver medal.

B. Marshall, Troy, Charles Carville, agent, 26 Broad-street, for the second best specimen of bleached and unbleached shirtings. (Gold medal having been before awarded.) Diploma.

Manchester Mills, Manchester, N. H., Stone, Swan & Co., agents, 48 Exchange Place, for beautiful specimens of cashmere and muslin de laines. Gold medal.

New-York Mills, Whitestown, N. Y., Fisher, Howe and Hamilton, agents, 21 Broad-street, for the best cotton cassimeres. Silver medal.

Phœnix Mills, Warwick, R. I., B. C. Harris & Son, agents, 74 Pine-street, for bleached and brown 10–4 and 11-4 sheetings. Diploma.

B. Marshall, Troy, Charles Carville, agent, 26 Baoad-street, for the best specimens of ginghams. Diploma.

S. Shepard & Son, Taunton, Mass., Holbrook, Nelson & Co., agents, 37 Pine-street, for Canton flannels. Diploma.

Curtwright Manufacturing Company, Greenboro', Geo., Lord, Warren, Salter & Co., agents, 41 Broad-street, for the best cotton yarn. (Silver Medal having been before awarded.) Diploma.

Little River Manufacturing Co., Fayetteville, N. C., Lord, Warren, Salter & Co., agents, 41 Broad-street, for the second best cotton yarn. Diploma.

F. W. Green, Brooklyn, L. I., for good specimens of Seine twine. Diploma.

DENTISTRY.

Joshua Buskey, 27 Murray-street, for porcelain teeth. Silver Medal.

DIES, CHASING, &C.

William M. Tompson, 169 William-street, for brass ornamental stamps for book binders. (Silver medal having been before awarded.) Diploma.

A. C. Morin, Philadelphia, Penn., for embossing dies. Diploma.

Jonathan Smith, 89 Reade-street, for good specimens of chased ornaments for harness work. Diploma.

Francis N. Mitchell, Boston, Mass., for the best seal impressions. Silver medal.

Geo H. Lovett, 5 Dey-street, for the second best seal impressions. Diploma.

DRUGS AND CHEMICALS.

John Van Deventer, 87 Barclay-street, for the best paste blacking. Diploma.

George P. Kettell, Charlestown Mass., for the best assortment of chemical medicinal preparations. Diploma.

Jeffreys and Hoyt, 146 Troy-street, for samples of chemical preparations and beautiful refined sulphur. Diploma.

William Colgate & Co., 6 Dutch-street, for the best pearl starch. Silver medal.

J. F. Duff, 150 Rivington-street, for the second best pearl starch. Diploma.

Joseph E. Hover, Philadelphia, Pa., George F. Nesbit, agent, corner Wall and Water streets, for the best black writing ink. Silver medal.

Davids & Black, 112 John-street, for the second best black writing ink. Diploma.

Tilden & Co., New Lebanon, N. Y., for the best blue ink. Diploma.

Davids & Black, 112 John-street, for the best red ink and machine copying ink. Silver medal.

J. A. Wadsworth, Providence, R. I., for the second best red ink. Diploma.

Charles Partridge, 3 Courtlandt-street, for the best friction matches, segar lights and wax tapers. Silver medal.

Withington, Frances and Welch, 7 Dutch-street, for the best mustard. Diploma.

Miss Anna Maria Tyler, 6 Third Aveuue, for the best white varnish. Diploma.

Charles Pavey, 494 Hudson-street, for water-proof leather preservative. (A Silver medal having been before awarded.) Diploma.

H. W. Worthington, Philadelphia, Schieffelin, Fowler & Co., agents, 142 Front-street, for the best Prussiate of potash. Silver medal.

Brooklyn Oil and Candle Co., Brooklyn, L. I., for the best lard candles. Diploma.

Charles H. Meyer, Forty-first street and Seventh Avenue, for refined camphor of excellent quality. Diploma.

John Correll, 174 Rivington-street, for prepared cocoa and sweet chocolate, both of the best quality. Diploma.

M. Hallowes, St. Mary, Geo. S. Burkhalter, agent, corner Fulton and Church streets, for Georgia arrowroot, equal to the best Bermuda. (Silver medal having been before awarded.) Diploma.

J. W. Kelly, 171½ William-street, for lemon sugar, a good substitute for lemons in preparing lemonade. Diploma.

Tilden & Co., New Lebanon, N. Y. for prepared medicinal herbs and vegetable extracts. Silver medal.

George Mather, Front-street, for a variety of fine printing inks. (Silver medal having been before awarded.) Diploma.

G. R. Howell, 65 Centre-street, for silvering paste, a good article. Diploma.

John P. Ridner, 497 Broadway, for an assortment of superior permanent colors for artists' use. Silver medal.

Litchfield & Co., 159 Front-street, for adamantine candles, and very pure lard oil. Diploma.

Thos. P. Shepard, Providence, R. I., G. W. Lamson, agent, 92 Wall-street, for superior oil of vitriol. Diploma.

A. Stillman, Novelty Iron Works, for a sample of New-Orleans sugar, made and very well purified by one operation. Silver medal.

L. Brumleu, Dutchess Co., N. Y., Schieffelin, Fowler & Co., agents, 142 Front-street, for a superior quality of Paris Green. Silver medal.

William Burger, 50 Cortlandt-street, for beautiful crystalized saltpetre. Diploma.

Truslow & Jackson, 297 Front-street, for calcined magnesia, a good article, and well prepared. Diploma.

Daniel F. Tiemann, 17 Burling Slip, for an assortment of paints of various colors, of fine quality, among which is a beautiful specimen of artificial ultra marine. Silver medal.

Robert Haslewood, 372 Washington-street, for beautiful samples of chrome green, vermillion and paints. Silver medal.

Samuel Rix, Brooklyn, L. I., for the best samples of varnishes and Japan. Diploma.

J. A. Wadsworth, Providence, R. I., for a superior quality of dentrifice. Diploma.

John C. Hart, 384 Grand-street, for very good orris tooth paste. Diploma.

EDGE TOOLS, CUTLERY, &c.

Ibbotson & Horner, 33 Liberty-street, for the best table and pocket cutlery. Gold medal.

John C. Nixon & Son, 91 Nassau-street, for beautiful specimens of cutlery and engravers' tools. (Silver medal having been before awarded.) Diploma.

A. L. Ames, North Easton, Mass., for excellent shoe knives. Diploma.

R. Heinisch, Newark, N. J., for fine specimens of tailors' shears, razors and scissors. Silver medal.

Anthony Vittally, Newark, N. J., for shoemakers' tools, of fine workmanship. Silver medal.

Andruss & King, Newark, N. J., for improved plough and fillester planes. Silver medal.

Joseph Goldie, 133 Attorney-street, for anvil and vice. Silver medal.

Mockridge & Francis, Newark, N. J., for an excellent assortment of carpenters' and joiners' tools. (Silver medal having been before awarded.) Diploma.

O. Hanks, Brooklyn, L. I., for plumb and level. Silver medal.

Utica Screw Company, Utica, N. Y., for superior wood screws. Gold medal.

John J. Lewin, 79 Forsyth-street, for dentists' files. Diploma.

Rufus Bliss & Co., Pawtucket, R. I., for good specimens of hand screws, chisels, handles, &c. Diploma.

Selah Hiler & Co., 69 Forsyth-street, for goods specimens of copper rivets and burrs. Diploma.

Joseph Weed, 96 Division-street, for a good specimen of tailors' irons. Diploma.

S. D. Willmott, Long Island, for a good steel spring hand saw. Diploma.

Seth Whalen, West Milton, Saratoga Co., N. Y., for a good corn cutter. Diploma.

D. & H. Scovills, Pettibone & Curtis, agents, 6 Gold-street, for good specimens of planters' hoes. Diploma.

J. F. & S. Hopkins, West Cambridge, Mass., for forks and pronged hoes. Silver medal.

W. K. Gates, Lee, Mass., for forks and hoes. Diploma.

J. Johnson & Brothers, Paterson, N. J., for good specime sofa, and table castors. Diploma.

David Maydole, Norwich, Conn., for fine specimens of na mers. Diploma.

Henry Nelson, 240 Third Avenue; for hammers and sledges. Diploma.

George Harvey, 89 Elizabeth-street, for brace and bitts. Diploma.

James Duffy, Albany, N. Y., for specimens of hardware. Diploma.

Philip Quigley, Newark N. J., for excellent spoke shaves. Diploma.

Sanford, Parmlee & Co., Meriden, Conn., for fine augers. Diploma.

William H. Frasse, 56 Chatham-street, for milling tools for ornamenting gold and silver ware. Silver medal.

J. Mitchell & Co., Newark, N. J., for superior harness trimmings. Diploma.

Christopher Wray, 36 Chatham-street, for mechanics' tools. Diploma.

FINE ARTS, INCLUDING ENGRAVINGS AND DAGUERREOTYPES.

Miss Rebecca Cummings, 591 Houston-street, for the best group of flowers in water colours. Diploma.

Miss M. P. Seary, 130 Prince-street, for a group of flowers in water colours. Diploma.

Miss M. Dimond, 130 Prince-street, for a good group of flowers in water colours. Diploma.

Mrs. Palmer, 230 East Broadway, for a specimen of drawing. Diploma.

Thomas Lippiatt, 145 Canal-street, for the best India ink drawing. Diploma.

M. B. Allerton, 164 West-street, for the second best India ink drawing. Diploma.

J. Busch, 90 Chambers-street, for the best drawing in chalk. Diploma.

Moreau Morris, Fiftieth-street, for the second best drawing in chalk. Diploma.

J. A. McDougall, 251 Broadway, for the best miniature painting. Silver medal.

Mrs. Mary Livermore, Boston, Mass., for the second best miniature painting. Diploma.

S. J. & W. E. Bower, Providence, R. I., for the best drawing on monochromatic grounds. Diploma.

Read & Co., 104 Avenue C, for the best stained glass. Silver medal.

Thomas Jones, 226 Sixth Avenue, for the second best stained glass. Diploma.

W. H. Butler, 251 Broadway, for the best coloring on engravings. Diploma.

Webb and Chapel, 71 Division-street, for the best landscape and ornamental window shades. Diploma.

William Hinton, 212 Pearl-street, for the second best ornamental window shade. Diploma.

Thomas Blanchard, Boston, Mass., for two marble busts, turned in Blanchard's self-regulating machine. Silver medal.

Richard Dunphy, 283 Third Avenue, for busts in plaster. Silver medal.

John Whitfield, Utica, N. Y., for the best cut cameos. Silver medal.

Richard Dunphy, 383 Third Avenue, for cut cameos — meritorious work for a youth. Silver medal.

John R. Chapin, 75 Nassau-street, for a design — Death of Major Ringgold. Diploma.

William Howland, 69 Nassau-street, for the best wood engraving. Diploma.

Sarony & Major, 117 Fulton-street, for the best specimen of lithography ; printed in colors. Silver medal.

D. G. Johnson, 140 Nassau-street, for a map of the world. Diploma.

L. Nagel, 74 Fulton-street, for the second best lithography. Diploma.

William M. Brownson, 56 Gold-street, for the best specimens of embossed zylographic labels. Diploma.

Snyder & Govey, for the best specimens of embossed lithographic labels. Diploma.

Mrs. Ann. T. Weiser, 430 Pearl-street, for the best specimen of show bill mounting. Diploma.

M. A. Root, Philadelphia, for the best specimen of daguerreotypes. Silver medal.

Plumbe's National Daguerrian Gallery, for the second best specimen of daguerreotypes. Diploma.

H. S. Sadd, New-York, for the best mezzotint engravings. Diploma.

Mrs. Pelby, Boston, Mass., for a wax figure of the Crucifixion. Silver medal.

FIRE ARMS.

S. B. Amory, Goshen, N. Y., for a double barrel rifle, the best specimen of workmanship. Silver medal.

A. T. Cochrane, 288 Greenwich-street, for a miniature cannon, a highly finished piece of workmanship. Diploma.

Smith and Percival, Norwich, Conn., for a self-charging pistol, ingenious in construction, and good workmanship. Diploma.

FIRE WORKS.

J. W. Hadfield, Williamsburgh, L. I., for the best exhibition of fireworks. Silver cup.

John Turrel, Fort Washington, N. Y., for the second best exhibition of fireworks. Silver medal.

FISHING HOOKS AND TACKLE.

Job Johnson, Brooklyn, L. I., for the manufacture of various kinds of fish hooks. Silver medal.

Geo. W. Griswold, Pottersville, N. Y., for the Griswold hook, (ingeniously made.) Diploma.

Theodore F. Englebrecht, 79 John-street, for the Sockdologer hook, (highly finished.) Diploma.

J. & J. C. Conroy, Fulton, cor. Cliff-street, for a splendid display of fishing rods, reels and tackle. Silver medal.

CARVED AND GILT FRAMES.

Stevenson & Waller, 13 Spruce-street, for a splendid enriched and gilded frame. Silver medal.

John Silva, 119 Walker-street, for a veneered frame. Diploma.

Downs and Jenkins, 119 Walker-street, for large miniature frames. Diploma.

MANUFACTURED FURS.

James Davies, 232 William-street, for a gold fox muff, well made. Diploma.

GLASS AND EARTHENWARE.

Brooklyn Flint Glass Co., Brooklyn, L. I, for fine cut glass of very superior quality and color. Silver medal.

Bennett & Brother, Pittsburg, Penn., for superior specimens of Rockingham ware. Silver medal.

WINDOW GLASS.

Redford Glass Co., Redford, N. Y., for crown window glass. (Medals before awarded.) Diploma.

Richards & Brookfield, 32 Burling Slip, for cylinder glass. Diploma.

GRATES.

William and Nathan Jackson, 238 Front-street, for the best grates. Gold medal.

Geo. Bettner, 57 Seventh-street, for an evaporating grate. Diploma.

HATS AND CAPS.

Wallis and Holdsworth, 174 Fulton-street, for the best silk hats. Silver medal.

Charles Knox, 128 Fulton-street, for the second best silk hats. Diploma.

John N. Genin, 214 Broadway, for silk velvet caps and children's hats. Silver medal.

Charles Knox, 128 Fulton-street, for ladies' riding hats. Diploma.

E. T. & S. Ryder, 194 Water-street, for otter caps. Diploma.

HEMP, AND ITS MANUFACTURES.

L. T. Beardsley, 13 South William-street, for very superior flax-thread and shoe twine. (A Gold medal having been before awarded.) Diploma, and a special premium of a Silver cup.

Robt. J. Didlake, Winchester, Kentucky, McGregor & Morris, agents, 114 Front-street, for the best hemp. Silver medal.

S. C. Salisbury, Newport, Kentucky, Cormick & Co., agents, 5 Beaver-street, for the second best hemp. Diploma.

INDIA RUBBER GOODS.

Hayward Rubber Co., Colchester, Conn., for the best spring tempered metallic shoes. Silver medal.

Newark India Rubber Manufacturing Co., Newark, N. J., for an India rubber air camel. Diploma.

Goodyear & Ely, 58 Liberty-street, for sheet India rubber goods. Silver medal.

M Dodd & Sons, Newark, N. J., for superior work on suspenders. Diploma.

JAPANING AND ORNAMENTAL PAINTING.

G. A. Backus, 44 Fulton-street, for the best ornamental japaning. Silver medal.

Grigg & Milward, Brooklyn, L. I., for ornamental japaning on glass. Silver medal.

Henry Day, Boston, Mass., for the best gold and bronze painting on papier mache. Silver medal.

Mrs. Bartlett, Williamsburgh, L. I., for painting on papier mache. Silver medal.

LAMPS AND CHANDELIERS.

John Warrin & Co., 341 Broadway, for the best specimens lackered girandoles. Gold medal.

John Mitchell & Co., 132 Mercer-street, for the best silvered solar lamps and girandoles. Gold medal.

Browe & Dougherty, Newark, N. J., for the design on a gas chandelier. Silver medal.

Deitz, Brothers & Co. 139 William-street, for a display of lamps. Silver medal.

T. F. Strong, 304 Broadway, for designs on lamps. Silver medal.

George Edwards, 114 Nassau-street, for the best tin and composition lanterns. Silver medal.

Samuel Hassell, 91 Fulton-street, for hall lanterns. Diploma.

Roberts, Eagles & Co., Newark, N. J., for excellent carriage lanterns. (Silver medal having been before awarded.) Diploma.

Samuel Rust, 42 Gold-street, for the best Britannia lamps. Diploma.

John Johnson, 1 Doyer-street, for gas fittings. Silver medal.

LEATHER.

Darwin N. Edson, Olive, Ulster Co., N. Y., for the best butt leather. Silver medal.

Thomas Scott & Son, 3 Jacob-street, for the best ladies' sole leather. Silver medal.

E. C. Ely & Sons, 31 Ferry-street, for the second best ladies' sole leather. Diploma.

Jacobus & Utter, Newark, N. J., for skirting and bag leather. Diploma.

A. H. Brahe, & Co., 27 Ferry-street, for dressed calf skins. Silver medal.

Dennis Sullivan, Morristown, N. J., for calf skins in rough. Diploma.

H. P. Graves, 156 Seventeenth-street, for morrocco and binding. Diploma.

James Cook, 114 Nassau-street, for coloured skivers. Diploma.

Luman Foot, North Canaan, Conn., for the best barked tanned sheep skins. (Silver medal having been before awarded.) Diploma.

George Dudley, Winsted, Conn., for the best bark skivers. Diploma.

D. B. Crockett & Co., Newark, N. J., for excellent specimen of patent leather. Silver medal.

William Whitefield, Frankfort-street, for well finished saddle leather. Diploma.

J. H. Ludlum, 46 Greene-street, for the best leather hose. Silver medal.

Page & Maurice, corner Elm and Walker streets, for the second best leather hose. Diploma.

S. C. Lynes, 60 Canal-street, for the best sheep skin mats. Diploma.

P. Dignen, 899 Broadway, for excellent sheep skin mats. Diploma.

Guy Gibbs, 15 Maiden Lane, for excellent sheep skin mats. Diploma.

J. H. Ludlum, 46 Greene-street, for a leather fire-bucket. Diploma.

LOCKS, DOOR SPRINGS AND HINGES.

Amos Day & Co., Newark, N. J., for the best specimens of night-latches. Diploma.

George Sommers, Newark, N. J., for the best trunk and padlocks. Silver medal.

Day & Newell, 589 Broadway, for the best specimen of locks. Silver medal.

Morgan, Isbell, Curtis & Co., W. Meriden, Conn., H. H. Elwell, agent, for the best union bolt locks. Silver medal.

H. Burwell, 15 Platt-street, for improved drop-latch, new and useful. Silver medal.

James H. Gager, 219 Pearl-street, for a gate-hinge and fastening. Diploma.

George Wellington, 589 Broadway, for a superior chest lock. Silver medal.

C. Reed, Cambridge, Mass., for blind hinge and fastener. Silver medal.

Argillo Works, Albany, N., Y., George H. Swords, agent, 116 Broadway, for very superior door knobs. Silver medal.

N. G. Dubois, Brooklyn, L. I, for mortice and rim locks. Diploma.

Quincy & Delapierre, 81 John-street, for door springs. Diploma.

Reed & Sprague, 12 Old Slip, for cast butt hinges. Diploma.

James Henry, 148 Wooster-street, for mineral door knobs. Diploma.

MACHINERY AND MODELS.

Thomas Dobson, 13 Morris-street, for the best washing machine. Diploma.

Bellows and Gilbert, Brooklyn, L. I., for the second best washing machine. Diploma.

Walter M. Gibson, 349 Broadway, for the best Croton filter. (Gold medal having been before awarded.) Diploma.

Samuel H. Lewis, corner Ann and Gold-street, for the second best Croton filters. Diploma.

John Pierce, 11 Wall-street, for a water filter. Silver medal.

J. G. Ross, 94 Clinton-street, for the best tide water wheel. Diploma.

Harvey Stiles, 292 Water-street, for the second best tide water wheel. Diploma.

G. B. Hartson, 42 Gold-street, for the best large lathe. Silver medal.

James T. Perkins, Hudson, N. Y., for the second best lathe. Diploma.

Leonard Smith, Troy, N. Y., for the best smut machine. Silver medal.

Wm. P, Springer, Oswego, N. Y , for the second best smut machine. Diploma.

E. & T. Fairbanks & Co., St. Johnsbury, Vt., Fairbanks & Co., 81 Water-street, for the best platform scales. (Silver medal having been before awarded.) Diploma.

A. Gerald, 120 Barrow-street, for the second best platform scales. Diploma.

J. D. Dale, Lansingburgh, N. Y., for a double beam platform scale. Diploma.

Samuel S. Potter, 191 Henry-street, for suspension coal scales, (Silver medal having been before awarded.) Diploma.

J. L. Brown & Ayres, 83 Fulton-street, for bank scales of excellent workmanship. Diploma.

R. Charles, 165 Greenwich-street, for tea scales; a new and useful article. Diploma.

William B. Leonard, Matteawan, N. Y., for the best railway drawing head. Silver medal.

William Bradley & Brothers, Paterson, N. J., for the second best railway drawing head. Diploma.

L. Kirk, Reading, Penn., for a direct action steam (tilt) hammer. Silver medal.

Samuel H. Lewis, corner Ann and Gold-street, for a steamboat filter. Silver medal.

George Talcott, Oswego, N. Y., for a ship's capstan. Diploma.

George Talcott, Oswego, N. Y., for a vessel winch. Diploma.

William F. Ketchum, Buffalo, N. Y., for a mowing machine, of great simplicity of construction. Silver medal.

Thomas Davis, Utica, N. Y., for a working model of a steamboat. Diploma.

Willard Leavens, West Killingly, Conn., for an extra knotted loom harness. Diploma.

A. J. Williams, Utica, N. Y., for a wire harness for weaving. Diploma.

George Lewis, 21 Eldridge-street, for stocks and dies. Diploma.

Roys and Wilcox, Berlin, Conn., for a set of tinmen's machines. Diploma.

Noah Smith, Berlin, Conn., for a set of tinmen's punches. Diploma.

C. Emmons, 87 Forsyth-street, for a planing, tongueing and grooving machine. Silver medal.

D. D. Badger & Co., Boston, Mass., for revolving iron window shutters. Gold medal.

Asa Barber, Stephentown, Rensselaer Co., N. Y., for improved coffee mills. Diploma.

Thomas Thatcher, New-York, for a morticing and tenoning machine. Silver medal.

Flagler, Baker & Co., 211 Water-street, for improvements on portable forge and bellows. Silver medal.

Horatio Allen, Novelty Iron Works, for a steam register and vacuum gage. Gold medal.

Paul Stillman, Novelty Iron Works, for an engine register with clock, improved vacuum and steam gage. (An improvement on the one formerly exhibited.) Silver medal.

James Rodgers, 410 Broadway, for steam vacuum gages and meter. Silver medal.

Paul Stillman, Novelty Iron Works, for a high pressure steam gage. Diploma.

David Elston, Brooklyn, L. I., for a good plan of clap boarding. Diploma.

N. P. Ames, Springfield, Mass., Smith & Lee, agents, 39 Maiden Lane, for a pump bitt. Diploma.

H S. Berry, Westerly, R. I., for self-acting temples. Diploma.

Sewell Benson, Williamsburgh, L. I., for an apple-paring machine. Diploma.

Fowler M. Ray, corner Thirty-third-street and Third Avenue, for a railroad bumper and connection. Diploma.

Fay and Joslin, New-Hampshire, for a boring and morticing machine. Silver medal.

F. G. Richardson, 107 John-street, for samples of wire cloth. (A Silver medal having been before awarded.) Diploma.

Gould & Inslee, Newark, N. J., for a hand morticing machine. Diploma.

Fay and Joslin, New-Hampshire, for a rachet drill. Diploma.

Cox and Marshall, 4 Gold-street, for excellent quality of enammelled ware. Diploma.

Stumpf & Steimer, Williamsburgh, L. I., for good specimens of enamelled ware. Diploma.

F. H. Bartholomew, 165 Front-street, for self-acting hydrants. Diploma.

Charles J. Gaylor, 128 Water-street, for good fire safes. Silver medal.

John Lewis, 76 Broad-street, for a railroad respiratory air spring. Silver medal.

Fowler M. Ray, corner Thirty-third-street and Third Avenue, for an iron India rubber spring. Silver medal.

Daniel Howell, 3 Nassau-street, for a tanning machine. (Silver medal having been before awarded.) Diploma.

Charles Walker, Brooklyn L. I., for a model of a mustard mill. Diploma.

Charles Ross & Co., 38 Broadway, for a portable flour mill. (Silver medal having been before awarded.) Diploma.

Charles Ross & Co., 38 Broadway, for a useful corn and cob mill. Silver medal.

A. B. Allen & Co., 87 Water-street, for a hand corn mill. Diploma.

N. P. Labarte, 46 Eldridge-street, for a tuyere iron. Diploma.

B. S. Benson, Baltimore, Md., for a hydraulic ram. (Silver medal having been before awarded.) Diploma.

W. B. Douglas, Middletown, Conn., for a hydraulic ram. Silver medal.

J. L. Gatchel, Elkton, Md., for a hydraulic ram. Silver medal.

Eben Tuttle, Boston, Mass, for a centre-vent pressure water wheel. Silver medal.

T. D Jackson, J. V. D Wyckoff, agent, 181 Broadway, for an annunciator. An ingenious piece of workmanship. Gold medal.

D. R. Pratt, Worcester, Mass., for good cotton rollers. Diploma.

Alexander Dickerson, Newark, N. J., for specimens of bar iron, by a new process of close forge. Gold medal.

Napoleon Hayman, 130 William-street, for an improved steam bell. Diploma.

Thomas Godwin, corner Eleventh-street & Broadway, for a summer and winter hydrant and street washer. Silver medal.

Fowler M. Ray, corner Thirty-third street & Third Avenue, for improvement on railroad wheels. Gold medal.

J. A. Campbell, Lockport, N. Y., for match flasks, for moulding. Silver medal.

Thomas Godwin, corner Eleventh-street & Broadway, for an arrangement of pipes for circulating hot and cold water for shower baths. Diploma.

Samuel J. Proper, corner Thirty-first street & Lexington Avenue, for a tenoning machine. Silver medal.

James Rowe, Tampa Bay, Florida, for a crushing mill. A simple and useful article. Silver medal.

William Ballard, 7 Eldridge-street, for jack screws. A good article. Diploma.

S. W. Bullock, 27 Peck Slip, for a dry good press. A good and useful article. Silver medal.

James T. Perkins, Hudson, N. Y., for a good specimen of cut gearing. Diploma.

C. Stephens & Co, Port Henry, N Y., Sherman & Morris, agents, 76 Broad-street, for superior specimen of bloom iron. Diploma.

A. W. Metcalf, 63 and 65 Centre-street, for superior brass cocks. Silver medal.

Ingram & Stuart, 338 Bowery, for a water closet. Diploma.

A. H. Mallory, 9 Pine-street, for a simple and good water wheel regulator. Diploma.

Daniel Griffin, 192 Broadway, for a heat generator. (Silver medal having been before awarded.) Diploma.

Daniel Griffin, 192 Broadway, for a plan for heating air for factories Gold medal.

Solomon Whipple, Albany, N. Y., for a file cutting machine. Diploma.

A. W. & J. H. Von Schmidt, 43 Duane-street, for the best ship pump. Gold medal.

Wm. D. Andrews, 456 Water-street, for the second best ship pump. Diploma.

A. B. Ashmead, 174 West-street, for a horse pump. Diploma.

William Bradley & Brothers, Patterson, N. J., for a silk cleaning machine. Silver medal.

Matteawan Co., Leonard, Hone & Nicoll, agents, 39 Pine-street, for a cotton spinning machine. Silver medal.

Earle & Ames, Worcester, Mass., for the best specimen of machine cards. Diploma.

T. K. Earle & Co., Worcester, Mass., for a good specimen of machine cards. Diploma.

C. Sawyer, Brooklyn, L. I., for good specimens of weavers' shuttles. Diploma.

R. D. Carver, Matteawan, N. Y., for weavers' reeds of superior quality. Silver medal.

Conger & Crane, Newark, N. J., for an ingenious bloom furnace. Silver medal.

James Lightbody, Jersey City, N. J., for an improved carpet machine Diploma.

J. Barton, 5 Platt-street, for an engine bell. Diploma.

A. Stillman, Novelty Iron Works, for a safety tube for steam boilers. Silver medal.

Rice & Jenkins, Boston, Mass., for excellent soda fountains. Silver Medal.

Jesse Urmy, Wilmington, Del., for a stationary horse power. Silver medal.

Lackawanna Iron Co., Luzerne Co., Pa, for good rail-road bars. Gold medal.

Murdock, Leavitt & Co., 77 Pine street, for rail-road bars. Silver medal.

Stillman, Allen & Co., Novelty Works, for the operating engine, for the "20th Annual Fair," from the Novelty Iron Works—a first rate article, and worthy of a premium of the highest grade. (One of the proprietors being a manager, the same, by the rule of the Institute, is excluded from receiving a premium.)

Henry Turner, 181 Delancy-street, for a model of a steam engine. Diploma.

J. C. Howard, Williamsburgh, L. I., for a new and ingenious steam power machine. Diploma.

Alonzo Gilman, Troy, N. Y., for a self-feeding card press. Silver medal.

C. W. Haven, Lowville, Lewis co., N. Y., for a printing press. Silver medal.

S. S. Valentine, Bangor, Me., for a centrifugal water wheel. Diploma.

Oliver Leonard, Poultney, Vt., Backus & Kellogg, agents, 125 Maiden-lane, for a wood and iron axle. Diploma.

Smith Groom, Troy, N. Y., for a screw bolt and nut machine. Silver medal.

A Whitney & Son, Philadelphia, Pa., for a corrugated railroad wheel. Silver medal.

Solomon Whipple, Utica, N. Y., for a wrought and cast iron bridge. Silver medal.

W. H. Allen, Brooklyn, L. I., for the best bridge made principally of wood. Diploma.

J. M. Ryder, Harlem, N. Y., for a draw-bridge. Silver medal.

Lewis Knapp, Hudson, N. Y., for excellent specimen of metal roofing. Silver medal.

J. D. Forbes, Perth Amboy, N. J., for good specimens of fire brick. Silver medal.

Kreischer & Mumpeton, 62 Goerck-street, for samples of fire brick. Silver medal.

James Bogardus, 40 Eldridge-street, for improvements on his eccentric mill. (Gold medal having been before awarded.) Diploma.

George Law, Baltimore, Md., for Chase's card spinner. Silver medal.

H. E. Lawrence, Flushing, L. I., for a patent excavator. Diploma.

Francis Windsor, Hudson, N. Y., for a double acting bellows. Diploma.

John Maxson, De Ruyter, N. Y., for a new carriage spring. Silver medal.

Thomas J. Wells, Twenty-ninth-street, for a sawing machine. Diploma.

Bulkley & Horton, for a pair of rotary shears. Silver medal.

James Bogardus, 40 Eldridge-street, for a portable horse power. Silver medal.

Perry G. Gardiner, for the best cotton press. Gold medal.

Asa Barber, Stephentown, Rensselaer Co., N. Y., for a portable iron corn mill. Silver medal.

Tomlinson & Hopkins, for a fire and burglary alarm. Silver medal.

H. P. Blackman, 89 Canal-street, for a knife cleaning and boot polishing machine. Silver medal.

James Rowe, Tampa Bay, Florida, for an improved iron carriage wheel. Diploma.

R. V. De Witt, Albany, N. Y., Woodward & Dusenberry, agents, 45 William-street, for a plan of an elevated rail-road. Diploma.

B. S. Benson, Baltimore, Md., for a rotary steam engine. Silver medal.

F. W. Wilke, Philadelphia, Pa., for garden pumps. Diploma.

A B. Ashmend, 174 West-street, for garden pumps. Diploma.

Ezra Reed, Newark, N. J., for a window sash and butt. Diploma.

Amos R. Carter, Newark, N. J., for an irregular turning machine. Diploma.

Daniel Waters, Worcester, Otsego Co., N. Y., for a leather roller. Diploma.

Wm. H. Rodgers, 410 Broadway, for a sewing machine. Diploma.

Jason C. Osgood, Troy, N. Y., for a tilting wagon. Diploma.

C. Reed, Cambridge, Mass., for a circular saw set. Diploma.

Thomas Culbertson, Cincinnati, Ohio, for a dry clay brick press. Silver medal.

Beale & Hall, Lowell, Mass., Charles Ross & Co., agents, 38 Broadway, for a corn cracker. Diploma.

Richard Sealy, 542 Pearl-street, for specimen of double tinned pipe. Diploma.

James Perry, 87 Elbridge-street, for an iron screw. Diploma.

C. D. Wright, Leesville, Conn., for a self-adjusting saw mill block. Diploma.

Charles Atwood, Birmingham, Conn., for specimens of jack chains. Diploma.

White, Bostwick & Co., Stamford, Conn., for specimens of jack chains. Diploma.

Ephraim Morris, New York, for an excavating and discharging machine. Silver medal.

C. H. Young, Painted Post, N. Y., for a machine for boring and morticing wagon hubs. Silver medal.

Thos. J. Chubb, for sawing. Diploma.

W. Haworth, 349 Broome-street, for a machine for stuffing horse collars. Diploma.

MATHEMATICAL AND PHILOSOPHICAL INSTRUMENTS.

J. L. & D. J. Riker, 78 Suffolk-street, for a well finished magnetic apparatus, with some novelties in the arrangement. Silver medal.

Samuel B. Smith, 297½ Broadway, for a well finished electro magnetic machine. Diploma.

Benjamin Pike, Jr., 294 Broadway, for a well finished electro magnetic machine. Diploma.

Henry M. Watkins, 167 William-street, for well finished electro magnetic machines. Diploma.

A. Newell, 294 Broadway, for a well finished electro magnetic machine. Diploma.

S. W. Chubbick, Utica, N. Y., for the workmanship on the electro magnetic telegraph. Silver medal.

A. Fitz, Jr., 508 Fourth-street, for the best telescope, with improvements made in the equatorial mountings. Gold medal.

S. S. Graham, Brooklyn, L. I., for a camera obscura of excellent workmanship. Silver medal.

William Dutch, 294 Broadway, for shades for magic lanterns. Diploma.

B. F. McCreary, 107 Norfolk-street, for the best electric machines. Silver medal.

John H. Emmer, 61 Nassau-street for an ingenious galvanometer. Diploma.

Robert Merrill, 149 Maiden Lane, for a storm compass. Diploma.

W. G. Merrill, Brooklyn, L. I., for a brass compass. Diploma.

Benjamin Pike, Jr., 294 Broadway, for mathematical instruments. Diploma.

Tagliabue & Negretti, 236 Water-street for portable barometers and hydrometers of various descriptions, and wet bubb thermometers. Silver medal.

Norton & Tagliabue, 240 Water-street, for barometers and thermometers. Diploma.

MUSICAL INSTRUMENTS.

A. G. Badger, Newark, N. J., for the best eight-keyed flute and Boehm flutes. Silver medal.

C. A. Zoesbish & Sons, 411½ Broadway, for brass instruments. Diploma.

NAVAL ARCHITECTURE.

Joseph Francis, Novelty Iron Works, for a galvanized iron life-boat. Gold medal.

John M. Weeks, Brooklyn, L. I., for the best model of a steam ship. Diploma.

William H. Hill, Greenport, L. I., for good ships' blocks. Diploma.

Jesse Reed, Boston, Mass., D. D. Badger & Co., agents, 44 and 46 Duane-street, for a new and valuable ship steerer. Gold medal.

NEEDLES.

Henry Essex, Newcastle, N. Y., L. & V. Kirby, agents, 49 Cedar-street, for superior needles. (Gold medal having been before awarded.) Diploma.

NEEDLEWORK, EMBROIDERY AND FANCY ARTICLES.

F. Barnes, 279 Greenwich-street, for handsome work boxes. Diploma.

R. A. Ackerman, Albany, N. Y., for a beautiful worsted work portfolio. Diploma.

Mrs. David Hudson, Columbus, for a very handsome worked apron. Diploma.

Mrs. S. J. White, Canaan, N. J., for knit worsted work on a rocking chair. Diploma.

Miss Helen Maria Libby, Park Row, for a beautifully worked bag Diploma.

Miss Julia F. Marcet, 84 Orchard-street, for the best embroidery on silk. Diploma.

Mrs. Hall, 276 Grand-street, for a very good fire screen. Diploma.

Miss V. Thompson, 84 Orchard-street, for the best worsted worked smoking cap. Diploma.

Miss Chapman, 15 Jay-street, Brooklyn, L. I., for two very handsome table covers. Diploma.

Mrs. R. Terrell, 36 Rose-street, for the best raised work on a lamp mat. Diploma.

Miss Elizabeth Banks, 533 Broadway, for a case of very good worsted work. Diploma.

Miss S. J. Heely, Newark, N. J., for the best silk suspenders. Diploma.

Mrs. Atkins, 219 Fulton-street, Brooklyn, L. I., for the best embroidered lamp stands. Diploma.

Mrs. D. S. Rogers, Brooklyn, L. I., for the best worsted worked table cloth. Silver medal.

Duncan & Cunningham, Bellville, N. J., Shepherd & Morgan, agents, 47 Fulton-street, for the best silk embroidered shawls, embossed piano covers, and embroidered table covers. Silver medal.

Mrs. Edwin Smith, 515 Bowery, for the second best embroidered table cover. Diploma.

S. T. K. Marshall, 112 Forsyth-street, for a bow and arrows. Diploma.

A. C. Messerve & Co., 60 John-street, for the best artificial flowers. Silver medal.

Henry W. Banks, 532 Pearl-street, for the second best artificial flowers. Diploma.

Miss S. J. Rowan, 672 Broadway, for a vase of spice flowers. Diploma.

Miss Elizabeth Lane, 51 Bleecker-street, for a case of composition fruits and flowers. Diploma.

Mrs. Strangman, 81 Henry-street, Brooklyn, L. I., for the best specimen of shell work. Silver medal.

Mrs. Carpenter, 63 Market-street, for a shell watch case. Diploma.

Miss Selleck, 211 Thompson-street, for a shell temple. Diploma.

Miss Eliza P. Gedney, 100 Sullivan-street, for a very pretty fly-trap. Diploma.

Miss A. B. Vreeland, 45 Rivington-street, for four carpet satchels. Diploma.

Mrs. Brooks, Brooklyn, L. I., for the best uncut velvet bonnet. Diploma.

Miss Maria Newman, 263 Fulton-street, Brooklyn, L. I., for the second best uncut velvet bonnet. Diploma.

Thomas Kendall, 243 Bowery, for two bonnets, bonnet frames and crowns. Diploma.

Miss S. Oliver, 246 Bowery, for the best child's white satin braided hat. Diploma.

Mrs. Elizabeth Williams, Bull's Ferry, N. J., for a lady's down bonnet. Diploma.

Mrs. William Simmons, 564 Broadway, for the best shirred bonnet and child's hood. Diploma.

Julitta Richards, 56 Canal-street, for the best plush bonnet, very neatly made. Silver medal.

Mrs. Caroline Wallace, 520 Hudson-street, for the best specimen of hair work. Diploma.

Miss Elizabeth Quackenbush, Harlem, N. Y., for a very good specimen of hair work. Diploma.

Mrs. S. H. Rowan, 672 Broadway, for a curious piece of hair work. Diploma.

N. J. Drummond, 309 Grand-street, for the best regalia. Silver medal.

Elias Combs, 260 Grand-street, for the second best regalia. Diploma.

Mrs. Odell, 42 Greene-street, for an embroidered velvet sack. Diploma.

L. H. Embury, 134 Bowery, for the best grate aprons. Diploma.

Mrs. Sherman, 254 Bowery, for the best ladies' corsets. Diploma.

Miss E. S. Wright, 168 Bowery, for ladies' corsets. Diploma.

Miss Johnson, for a silk tidy, (silk raised, spun and wove by the maker,) handsomely made. Diploma.

J. B. Palmer, Bloomfield, N. J., for a good rag carpet. Diploma.

Thomas Fair, 181 Greenwich-street, for a good list carpet. Diploma.

Louisa Jane Hazlet, 115 Waverly-place, for the best wax work imitation of vegetables. Diploma.

James Vere, 3 Pearl-street, for the best wax work imitation of fruit. Diploma.

Mrs. C. C. Dahlfeedt, 90 Grand-street, for the best specimen of embroidery. Silver medal.

Miss Josephine Hirley, 120 Chambers-street, for the best embroidered chair. Silver medal.

Miss Georgia Bentley, 56 Beekman-street, for an embroidered satchel. Diploma.

Miss Isabella Harrison, 441 Pearl-street, for a very good specimen of embroidery. Diploma.

Mrs. Hardcastle, 479 Broadway, for a specimen of embroidery. Diploma.

G. R. Corry, Philadelphia, Pa., for the best gents' kid gloves. Silver medal.

W. J. Ross & Co., 62 Third Avenue, for cleaning kid gloves. Diploma.

Miss E. Tuttle, 25 West Seventy-third-street, for a piece of beautiful patch work. Diploma.

A. Purdie, 105 William-street, for the best gimp, fringe, cord and tassels. Diploma.

Mrs. H. M. Pratt, Worcester, Mass., for a coat made from dog's hair. Diploma.

Mrs. E. Bradbrook, 279 Broadway, for the best infants' clothing. Silver medal.

Miss A. Jacobs, 619 Broadway, for the second best infant's clothing. Diploma.

Miss Margaret A Bearnes, 74 Madison-street, for an embroidered handkerchief. Diploma.

Mrs. S. C. Beman, 129 Nassau-street, for the best ready-made linen. Siver medal.

Mortimer Smith, 95 Beaver-street, for the second best ready-made linen. Diploma.

William Smith, 8 Attorney-street, for the best bead bag. Diploma.

Mary Shepard, Williamsburgh, L. I., for a good bead bag. Diploma.

Miss E. R. Megee, Philadelphia, Pa., for a well-made bead bag. Diploma.

A. Shepard, Williamsburgh, L. I., for a pair of ladies' stockings. Diploma.

Miss Lucy Curtis, Southbury, Conn., for the best silk knit hose. Diploma.

Z. M. Quimby, 303½ Broadway, for beautiful combs and fancy articles. Silver Medal.

William Panby, 90 Leonard-street, for carved shell and horn combs. Diploma.

Miss A. M. Kortkampf, 395 Broadway, for embroidery and wax fruit. Diploma.

Mrs. S. J. Slossen, 44 Third Avenue, for the best specimen of dress making. Diploma.

Mrs. Ann Pelton, Cedarville, Herkimer Co., N. Y., for a beautiful pair of stockings. Diploma.

Mrs. C. Colton, 51 Lispenard-street, for a shawl. Diploma.

Mrs. Sarah Dowdall, 67 Marion-street, for a wax doll. Diploma.

Harriet Raisbeck, 411 Hudson-street, for the best worsted rug. Silver Medal.

Lewis Mohr, 186 Second-street, for the best white quilt. Silver Medal.

Mrs. Abel Belknap, Newburgh, N. Y., for the second best quilt. Diploma.

Mrs. M. G. Arnold, Providence, R. I., for the best knit quit. Silver Medal.

Mrs. R. Swartz, 161 Washington-street, for the best cloth patchwork quilt. Silver Medal.

Scott & Moore, 124 Canal-street, for the best visite. Diploma.

Miss J. Johnson, Chautauque Co., N. Y., for the best pair of bead moccasins. Diploma.

Mrs. M. G. Chaddock, 124 Cambers-street, for a shaded net shawl. Diploma.

PAPER HANGING AND UPHOLSTERY.

Wm. S. Birch, Baltimore, Md., for the best specimen of paper hangings. Silver Medal.

Doty & Bergen, 120 William-street, for superior specimens of colored and fancy paper hangings. Diploma.

Hardenburgh & Janeway, New-Brunswick, N. J., for superior paper hangings. Diploma.

R. H. Towner, 225 Pearl-street, for the best hair seating. Diploma.

PENMANSHIP.

William C. Hoogland, 133 Jay-street, Brooklyn, L. I., for the best penmanship. Diploma.

GOLD PENS.

Spencer & Rendells, cor Broadway and Maiden Lane, for the best gold pens. (Short nibs.) Silver Medal.

PERFUMERY.

Eugene Roussel, Pqiladelphia, Pa., for the best soaps and perfumery. (Gold and silver medals before awarded.) Diploma.

Vroom & Fowler, 72 Cherry-street, for the second best walnut oil military shaving soap. Diploma.

C. Van Schoonhoven, 6 Courtlandt-street, for the second best walnut oil military shaving soap. Diploma.

PIANO FORTES.

James Pirsson, 88 Walker-street, for the best piano forte. Gold Medal.

Senior & Grovesteen, 118 Grand-street, for the second best piano forte. Silver Medal.

☞ These instruments are so equally balanced, that, had it not been for the superiority of the windlass turning pins over the common method, the committee would have been troubled to award the first premium to either competitor.

William Lindeman, 139 Centre-street, for a piano forte. Diploma.

Conrad Meyer, Philadelphia, Pa., for a piano forte. Diploma.

C. F. Harrison, 23 Canal-street, for a piano forte. Diploma.

The touch of each of these instruments is excellent, and all are admirable specimens of manufacture.

PREPARATIONS OF NATURAL HISTORY.

John G. Bell, 289 Broadway, for the best specimen of mounted birds. (Silver Medal having been before awarded.) Diploma.

Wm. H. Stearns, for a shade of birds. Diploma.

J. G. Bell, 289 Broadway, for a mounted squirrel. Diploma.

REGATTA.

Boat's crew of the "Adeline," for the best rowing in a 30 foot boot, from Castle-Garden around Bedlow's Island and back. Time 32 minutes. (C. L. Ingersoll, builder.) Silver cup.

Wm. McDonnell, for the best rowing in scull boat "Rough and Ready," (Coon & Evertson, builders,) from Castle Garden around Ellis' Island and back. Time 33 minutes. Silver Medal.

Francis D. Bigelow, for skill displayed in sailing the boat "James Green," without oar or rudder, from Castle Garden around Ellis' Island and back. Time 37 minutes. Silver Medal.

Wm. McDonnell, for skill in sailing the boat "Rough and Ready," without oar or rudder. Diploma.

RUSS PAVEMENT.

Horace P. Russ, New-York, for the Russ Pavement, having sustained its reputation through the winter. Gold Medal.

SADDLERY, HARNESS AND TRUNKS.

Lacey & Phillips, Philadelphia, Pa, for the best set of double wagon harness. Knapp Premium, Gold Medal.

Lacey & Phillips, Philadelphia, Pa., for the best single harness. Knapp Premium, Gold Medal.

T. Fitzharris, Brooklyn, L. I., for an excellent set of steel mounted harness. Silver Medal.

J. & R. Learn, 355 Broome-street, for an excellent and substantial set of coach harness. Diploma.

Wilson & Hendricks, 306 Hudson-street, for a set of cart harness Silver Medal.

John Lawson, 35 Willet-street, for cart hames. Diploma.

Daniel Weyerbecker, corner of Broadway and Fulton-street, for the best travelling trunk. Diploma.

Peter Campbell, Brooklyn, L. I., for the best fireman's cap. Diploma.

SIGN PAINTING.

J. H. Breidenbah, Jr., 58 Willliam-street, for the best specimen of manuscript sign painting. Silver medal.

James Ackerman, 103 Nassau-street, for machine cut letters for signs, and carved letter signs. Silver medal.

R. L. Weed, Brooklyn, L. I., for a sign. Diploma.

Erasmus B. Derby, Brooklyn, L. I., for a fancy sign. Diploma.

George W. Fordham, corner Wall and Pearl-street, for cast letters for signs. Diploma.

RAW AND MANUFACTURED SILK.

Raw.

John M. Summy, Lancaster, Penn., for the best specimen of reeled silk, (14 lbs.) Van Schaick Premium, $10, and a bronze medal.

R. D. Carson, Lancaster, Penn., for the second best reeled silk, (13 lbs.) Van Schaick Premium, $5, and a bronze medal.

David M. Eberly, Lancaster, Penn., for the best bushel of peanut cocoons. Van Schaick Premium $10, and a bronze medal.

W. S. Gill, Mount Pleasant, Ohio, for the second best bushel of peanut cocoons. Van Schaick Premium, $5, and a bronze medal.

Wm. G. Hewes, New-Orleans, La., for beautiful specimens of reeled silk. Silver medal.

John S. Peirce, Burlington, Vt., for specimens of reeled silk. Diploma.

Harriet Summy, Lancaster, Penn., for a bushel of cocoons. Diploma.

Manufactured.

Mrs. John S. Peirce, Burlington, Vt., for the best piece of silk for dresses, (60 yards in length.) Van Schaick Premium, $50, and a bronze medal.

J. W. Gill, Wheeling, Va., for a piece of black silk. Van Schaick Premium, $30, and a bronze medal.

John Fox, Sen., Wheeling, Va., for silk velvet. Van Schaick Premium, $20, and a bronze medal.

James Milward, Thirty-first-street and Eighth Avenue, for the best specimen of satin. Silver medal.

Charles Banfield, Wheeling, Va., for the second best satin. Diploma.

Court & Deschaux, 579 Greenwich-street, for the best samples of silk dying. Silver medal.

W. Fisher, Heyden & Co., Thirty-second-street and Ninth Avenue, for the second best samples of silk dying. Diploma.

Northampton Silk Co., John H. Kent, agent, 169 Pearl-street, for the best specimen of sewing silk. Van Schaick Premium, $10, and a bronze medal.

Nathan Rixford, Mansfield, Conn., for the second best specimen of sewing silk. Silver medal.

SILVER WARE.

Albert Coles, 6 Little Green-street, for silver knives and forks. (Silver medal having been previously awarded.) Diploma.

SILVER PLATING.

George W. Jackson, Brooklyn, L. I., for the best silver plating. Silver medal.

Robert Roberts, 562 Broadway, for the second best silver plating. Diploma.

SURGICAL INSTRUMENTS.

J. W. Powell, 261 Broadway, for an ingenious and useful eye fountain. Diploma.

B. F. Palmer, Meredith, N. H., for an artificial leg. Gold medal.

Frederick Skiff, H. B Babcock, agent, 289 Broadway, for an air-tight coffin. Diploma.

Alexander C. Stuart, 56 Harrison-street, for silver surgical instruments, neatly made. Diploma.

George W. Tuttle, 216 Broadway, for patent baby jumpers, useful for giving healthy exercise to children. Diploma.

W. W. Riley, Columbus, Ohio, for a forcep for extracting teeth. Diploma.

TURNING.

John H. Mead, 41 Hester-street, for the best wood and oval frame turning. Diploma.

Mark H. Middleton, Nineteenth-street, for a specimen of fancy turning. Diploma.

E. Harrison, 147 West Sixteenth-street, for turned tassel moulds. Diploma.

Slocum & Dwire, 17 Canal-street, for a splendid newell post. Diploma.

WIGS AND TOUPIES.

William A. Batchelor, 2 Wall-street, for wigs and toupies of excellent finish. Silver medal.

Miss Ellen Leary, 461 Greenwich-street, for a hair parting for ladies. Silver medal.

WOOL.

Daniel Rogers, Hoosick, N. Y., for the best fleece of wool. Gold medal.

E. L. Robards, Ferresburg, Vt., for a fleece of excellent quality of wool, with profitable weight. Silver medal.

N. Kellogg, Winsted, Conn., for a fleece of fine soft wool, strong and elastic. Silver medal.

WOOLLEN GOODS.

Northampton Woollen Manufacturing Co., Northampton, Mass., Henry A. Smith, agent, 31 Broad-street, for the best wool-dyed black cloth, made from American wool. Gold medal.

Welcome Farnum, Waterford, Mass., Fearing & Hall, agents, 55 Exchange Place, for the second best wool-dyed black cloth. Silver medal.

Wool Growers' Manufacturing Co., Little Falls, N. Y., Fisher, Howe & Hamilton, agents, 21 Broad-street, for black broadcloth. Diploma.

Utica Steam Mills, Utica, N. Y., McCurdy, Aldrich & Spencer, agents, 30 Broad-street, for broadcloth. Diploma.

Scofield, Capron & Co. Walden, Orange County, N. Y., Scofield & Co., agents, 34 Pine-street, for black cloths. Diploma.

Washington, Mills, New-Hartford, N. Y., F. Hollister, agent, for drab castors, for carriage cloths. Diploma.

Burlington Manufacturing Co., Burlington, Vt., Beals, Bush & Co., agents, 32 Broad-street, for the best plain cassimers. Gold medal.

Seneca Woollen Mills, Seneca Falls, N. Y., Fisher, Howe & Hamilton, agents, 21 Broad-street, for the second best plain cassimers. Silver medal.

Welcome Farnum, Waterford, Mass., Fearing & Hall, agents, 55 Exchange Place, for the best fancy cassimers. Gold medal.

Phelps' Manufacturing Co., Boundbrook, Conn., Beals, Bush & Co., agents, 32 Broad-street, for the second best fancy cassimers. Silver Medal.

Withered Brothers, Baltimore, Md., Beals, Bush & Co., agents, 32 Broad-street, for black fancy cassimers. Diploma

James Waterhouse, Centreville, R. I., Beals, Bush & Co., agents, 32 Broad-street, for fancy cassimers. Diploma.

George W Wight, 31 Gold-street, for printed satinets. Diploma.

Ballard Vale Co., Andover, Mass., Richards & Blake, agents, 51 Exchange Place, for white flannels. (Gold medal having been before awarded.) Diploma.

E. B. Force, Red Mills, N. J., for machine printing blankets. Silver medal.

Union Manufacturing Co., Norwalk, Conn, D. Brigham & Co, agents, 60 Pine street, for felt cloths. (Gold medal having been before awarded.) Diploma.

MISCELLANEOUS.

John P. Lundin, 40 Cherry-street, for a palm leaf basket. Diploma.

J. C. Tompkins, Newark, N. J., for shoe lasts. Diploma.

Bauer & Boden, 74 Fulton-street, for fancy paper boxes and writing desk. Diploma.

J. D. Stout, 172 Broadway, for superior razor strops. Diploma.

Timothy C. Ward, Newark, N. J., for japanned hats. Diploma.

H. F. R. Reeve, 173 Water-street, cap fronts. Diploma.

W. W. Hull, 140 West Broadway, for puns. Diploma.

F. Barnett & Sons, 152 Broadway, for superior morocco cases. Diploma.

R. J. Everitt, 91 Greenwich-street, for the Etna fuse, for mining and blasting. (A very superior article.) Diploma.

M. Davis, 31 Cedar-street, for figured leather belts. Diploma.

Caleb N. Bement, Albany, N. Y., for osier willow, for baskets, &c. Diploma.

Hose No. 1, New-York, for a hose carriage. Diploma.

Pupils of the Lancasterian School, J. E. Lovell, Principal, New-Haven, Conn., for maps done without a copy, entirely from memory. Diploma.

S. H. Doughty, 49 Liberty-street, for boy's belts. Diploma.

James Levy, 18th-street, cor. 3d Avenue, for a marble monument. Diploma.

William E. Price, 1 Spring-street, for a Venetian blind. Diploma.

Seth Lamb, 57 Reade-street, for metallic trunks and valices. Diploma.

Seth Lamb, 57 Reade-street, for an iron bedstead. Silver medal.

Charles A. Turnure, 64 Oliver-street, for bonnet frames. Diploma.

American Water Proofing Co., 263 Water-street, for a piece of cloth, made water proof. Diploma.

Calkins & Darrow, 28 Maiden Lane, for parasols and umbrellas. Diploma.

S. K. Baldwin, Meredith Bridge, N. H., for shoe pegs. Diploma.

James Smith, 11 Spruce-street, for a bird cage. Diploma.

Mitchell Gould, Newark, N. J., for brass and silver plated stair rods. Diploma.

T. Thomas & Son, 63 Nassau-street, for a brass fender. Diploma.

William Chase, 59th-street, for a bed cord. Diploma.

Clark & Solomon, 18 Fulton-street, for superior brooms. Diploma.

W. S. Arents, 36 Cherry-street, for a cedar pail. Diploma.

Philip Teets, 296 Greenwich-street, for tin milk cans. Diploma.

George R. Cholwell, 24 Maiden Lane, for pocket books, card cases, &c. Diploma.

Wm. E. Rose, 13 Chambers-street, for very superior gold mounted canes. Diploma.

Lee & Co., 503 Bleecker-street, for the best painted gauze wire window shades and screens. (Silver medal having been before awarded.) Diploma.

Samson Cariss, for the second best wire window shades. Diploma.

John M. Smith, 468 Broadway, for a marble refrigerator. Silver medal.

Samuel G. Cornell & Co., 175 Front-street, for fine specimens of lead pipe, smooth and of even thickness. Diploma.

P. J. Sherwood, 191 Eldridge-street, for an improved waffle iron. Diploma.

John Johnson, 1 Doyer-street, for superior hand rail brass, drawn over iron. Diploma.

J. S. Redfield, 137 Nassau-street, for slate drawing tablets. Diploma.

Wm. Connolly, Troy, N. Y., for coach lace. Diploma.

George H. Marden, Charlestown, Mass., for improved balance curtain fixtures. Silver medal.

Wm. A. Ashe, 133 Fulton-street, for spring box measures. Diploma.

Ames & Newell, Naugatuck, Conn., for India rubber door springs. Diploma.

R. H. Olssen & Son, 105 Maiden Lane, for a rocking horse. Diploma.

L. L. Porter, 380 Grand-street, for a willow cab. Diploma.

George Dunn, Newark, N. J., for coach and sulky railing. (A silver medal having been before awarded.) Diploma.

J. Bell, cor. 4th Avenue and 131st street, for excellent type cases. Diploma.

Abbott & Wilcomb, 295½ Pearl-street, for book binder's muslin. Silver medal.

Joel L. Hoyt, Port Jervis, N. Y., for a malleable iron shaft tug. Diploma.

The judges appointed on stoves and ranges, bank locks and castings, did not make reports to the premium committee.

STATEMENT

Showing the number of Premiums awarded to the Agricultural Department from 1835 *to* 1847.

Year.	Gold Medals.	Silver Cups.	Silver Medals.	Cash.	Diplomas.	Vols. of Books.
1835, ...	1		4		17	
1836, ...	3		9		28	
1837, ...	2		15		39	
1838, ...	4		21		42	
1839, ...	6	13	17		70	
1840, ...	2	18	12		60	
1841, ...	6	17	31		71	26
1842, ...	3	25	34	...	37	82
1843, ...	4	26	28		48	93
1844, ...	1	29	28	$70	46	120
1845, ...	5	35	44	100	38	128
1846, ...	6	57	50	110	21	137
1847, ...	1	44	61	55	16	123
	44	265	354	335	533	709

PREMIUMS

Awarded by the American Institute of the city of New-York, from 1835 *to* 1847.

Year.	Gold Medals.	Silver Cups.	Silver Medals.	Cash.	Diplomas.	Vols. of Books.
1835, ...	16		91		340	
1836, ...	27		125		249	
1837, ...	29		126		308	
1838, ...	26		167		396	
1839, ...	27	13	124		384	
1840, ..	12	18	60		391	
1841, ...	17	19	118		336	26
1842, ...	12	26	88		439	82
1843, ...	17	27	91		439	104
1844, ...	20	29	104	$150	444	120
1845, ...	34	35	181	135	356	131
1846, ...	43	58	263	110	485	137
1847, ...	32	47	254	165	448	123
	312	272	1792	560	5055	723

REPORTS ON FARMS.

FARM OF MR. BELL.

The farm occupied by Mr. Thomas Bell is situated in Morrisania, near this city, and comprises about 400 acres, being a part of the domain of William H. Morris, Esq. The present season, 100 acres have been cropped with hay, 40 acres with Indian corn, 18 acres with wheat, 12 acres with oats, 6 acres with rye, 5 acres with turnips, 3 acres with potatoes, and 10 acres with corn, sown broadcast, or in drills, for soiling; the remainder lying in pasture or fallow. There are also on the place 25 acres of orchard, principally Newtown Pippin trees, from which were sold last year 400 barrels of apples and 200 barrels of cider.

The stock of the farm consists of 75 cows, 52 of which give milk, two Durham bulls, 25 heifers, 6 working oxen, 6 horses for labor, 12 sheep of Bakewell or Leicester grade, and 50 or 60 hogs and pigs.

On the 16th day of July last, the field crops all looked well, which was doubtless owing, in a great measure, to superior management. The wheat was in the act of harvesting, and bid fair to yield 25 or 30 bushels to the acre. It was grown on land that had remained in fallow for many years: that is, a scanty pasture, interspersed with alders, dwarf cedars, wild grasses, &c. The ground was plowed twice in the summer of 1846; and previous to sowing, 25 loads of compost, made of swale or pond mud, mixed and fermented in the heap with barn-yard manure, were applied to each acre. The field in which this wheat was grown, at present is in excellent condition for laying down to grass, or for the cultivation of almost any kind of crop.

The fields of Indian corn, in general, looked vigorous, dark-colored, and were just in tassel, although the land varied in character, and had been differently tilled. We were particularly struck with the vigor of one field of eight acres, to which had been applied, broadcast, 400 loads, of 50 bushels each, of swale muck, mixed with 500 bushels oyster-shell lime. Another field of six acres, which previously had been cropped with grain, was manured with coal-ashes, a pint to a hill, and looked well.

Mr. Bell practices the system of soiling, in part, particularly with his milch-cows, and highly approves of the plan. He sells, upon an average, in this city, 500 quarts of milk per day, which amounts to more than $7000 a year. From the milk of one cow alone, he realized $530 in two years, notwithstanding she had a calf within that time, but was never dry.

Mr. Bell's bull is a thorough-bred Short-horn, imported from the celebrated herd of the late Earl Spencer. He is a superb animal, and has taken several prizes, as the first in his class, at the exhibitions of the New-York State Agricultural Society, and the American Institute.

Several of his cows are also thorough-bred Short-horns, but most of his herd consists of high grades, a cross of his bull Marius, with some of our best native stock. Of this cross, we observed 15 beautiful yearling heifers, of great promise, which were so docile that they could be approached and handled by any one who chose. This gentleness Mr. Bell attributes to the early attachment they acquired by bringing them up by hand when calves. The first three weeks following their birth, they were allowed to suckle the cow, after which they were fed a few weeks on skim milk, and then turned out to grass. This kind of treatment, no doubt, has a tendency to soften their dispositions, and greatly contributes to their gentleness when they come to be cows.

While looking at the herd, it was remarked by Mr. Bell, that every cow, without exception, which had broad *escutcheons* or *quirls*, formed by the meeting of the hair that points in different directions on the posterior parts of the animal, *wide apart*, were good milkers: but this proves nothing further than it goes, for his premium cow Shakeress, the best in the herd, has but a trifling development in this point, being the one from which he realized $530 in two years by the sale of her milk.

Mr. Bell is evidently a thorough-bred farmer, which is manifest from the characteristic neatness and excellent management of every part of his farm. He superintends in person, and puts on record most of the operations of the dairy, the farm-yard, and of the field; and is up and doing from early dawn to late at night. He keeps an account of his receipts and expenditures, which, at the end of the year, it is highly desirable he should make known to the public.

PHILIP SCHUYLER, *Chairman.*

D. J. BROWNE, *Secretary.*

COOPERS' FARM, BUSHWICK, L. I.

The committee visited this farm on Friday, the 3d of September, instant. Richard and John Cooper are young men, who came into possession of a small farm not many years ago, in indifferent condition. They have been industrious and intelligent, using thorough culture, and the best manures, including guano, &c. They have added several acres to their inheritance by purchase, at *three hundred dollars per acre*, which they cultivate with the help of four men and occasionally women and children to pick. They rendered to the committee statements as follows, all of them evidently within bounds:

Supplies to the markets of the city of New-York this summer, from 30 acres:

Peas in pod, 342 bushels, at 6s.,	$256 50
Potatoes, 1000 do 5s. 6d.,	687 60
do 500 do to dig.	
Tomatoes, 40 bushels per day whole crop.	
ripe, 1,400 bushels, at 4s.,	720 00
green, 100 do 2s.,	25 00.
Beans (Lima and Bush) 1,200 bushels, (Lima 4,000 cedar poles) at 3s. 6d.,	505 00
Cabbages, 1½ acres,	150 00
Cayenne peppers, $\frac{1}{10}$ of an acre, 24 bushels at 10s.,	30 00
Bush squashes and pumpkins,	27 00
Beats,	10 00
Corn, 3 acres.	
Turnips, blue top, 1½.	
Hay for their stock.	

Fences of 1½ inch slit pine plank on slit locust posts inserted in a very neat stone fence, all done by themselves, painted first with coal tar, and intended next to be painted with black oil paint.

The tomatoes planted on hills some 8 inches high at the centres.

The Lima bean poles of cedar, as large as one's arm, 8 or 9 feet long. After three years they are sharpened at the bottom, and are shortened a foot or so.

The ground presented the appearance of freshness, as if rained on in the morning of that day, while ground in the vicinity with weeds on it, appeared *too dry*. The Messrs. Cooper keep no weeds growing.

The committee recommend this little farm as presenting clear evidence of the high importance of intelligent culture, worthy of being held up as an example to others, showing that the farm is all indebted to the men upon it for its beauty and profit.

NICHOLAS WYCKOFF, *Chairman.*

H. MEIGS, *Secretary.*

STEAM ENGINES, MACHINERY, &c.

EXTRACT

From the Report of the Committee on Steam Engines, Models, and Machinery.

The Committee "on Steam Engines, Models, Machines, &c." at the late fair of the American Institute, held at Castle Garden, in the city of New York, beg leave, by this, their Supplementary Report, to enlarge upon and extend their remarks upon several of the machines there on exhibition, which from their superior merits are deserving a more full and particular notice, than was possible to give to them at the time of holding the fair; owing to the hurry of the moment consequent upon a large number of examinations.

Among the number which your committee have so selected as worthy of a particular consideration is the "Railway Drawing-head," of Wm. B. Leonard, Esq., of Matteawan, N. Y.

To duly appreciate the importance of this improvement, it will be necessary to state, that the object and use of the machine called a "Drawing-head," is to equalize the *bat* or *sliver* by which the size of the ultimate thread is made uniform and even, and is highly and vitally important in making a fine thread. The machine is used intermediate, between the carding machine, and the ropeing machine, in the series of machines by which cotton cloth is made. The beautiful conception of equalization of a bat of cotton before twisting into a thread, as done by such drawing-heads, is accomplished by combining and putting together a number of bats as they come from the carder, and by the aid of the machine in question are drawn out together, reducing the collected body of the whole to the size of one, at the commencement, and this process is repeated by associating the thus multiplied bat with others of the same kind,

until the combinations shall include several hundred of bats or slivers in one.

The principle of equalization is in part, that of compensation—the accidental happening of a larger portion, or part of one bat, coming opposite to a lesser part of another bat: but mainly in combining many slivers whereby the occasional difference of one, whether larger or lesser, may be associated with others of a more general uniformity of size, and by which it will be noted that the uniformity of size will be in proportion to the number of slivers multiplied.

Before *Railway* Drawing-heads were invented large *tin or wooden cases* were employed to receive and convey the bat from the carding machine to the drawing-head; persons were in attendance to sever the bat, and to take away the can when filled, putting an empty can in its place: requiring in a cotton mill of ordinary size, a large number of hands, to perform this part of the operation. Since the Railway Drawing-head has been introduced, that portion of labor has been wholly dispensed with.

The original conception of the idea of a railway to collect the bats as they were discharged from the carders, and deliver them to a drawing-head, was a citizen of Rhode Island—the name not remembered by your committee, but the invention as first presented to the world, had defects in its detail which rendered it of but little advantage to the manufacturer: nevertheless crude and imperfect as it was, the cotton manufacturer of this day, is under a deep obligation of praise to that individual for the outlines of a valuable machine.

When this original machine first made its appearance, as now, several carding machines were arranged in a line with each other, before which a transverse carriage called a "Railway," was made to move, sweeping past the head of each carder, and from which the bats fell upon the Railway—carrying the same forward in a body to the drawing-head—at the terminus of the carriage,—the back rollers of such a drawing-head corresponding in motion, with the motion of the carriage, was passed through and delivered in cans to be re-multiplied by separate drawing-heads, for that purpose; but it was found in practice, that inasmuch as it became necessary to suspend the operation of one or more of the carders, and that in stopping one, all the rest of the carders must be stopped or produce an unequal sliver it was found that the loss of time in the aggregate

was equal or nearly so, to counterbalance the advantage of the railway, over the labor of changing the cans by the old mode of doing it.

The exhibitor of the drawing-head on exhibition, overcame the defect of the original railway machines by giving to the front rollers a change of speed. For instance if a dozen carders constituted the system of carders belonging to one train of railway, and one of these carders were for any cause suspended from operation, the change of speed in the front roller, (the roller which determines the amount of drawing,) would necessarily be $\frac{1}{12}$ less, exactly corresponding with the diminution of the bat by such suspension of one carder; the remaining eleven carders being thus continued in operation, no loss of work or time was suffered. This change of speed has been effected by the inventor, by introducing into his system of gearing, connecting the front and back pair of rollers of the drawing-head, a double sliding clutch, which, when applied one way will give the requisite speed for the highest number of carders employed in the system; but when the same is applied and clutched to its opposite fellow, will give a reduced speed by putting in operation stud gearing corresponding thereto; the sliding of this clutch from one to the other, by a clutch lever for that purpose, is but the work of an instant of time, and the stopping of the delinquent carder, simultaneous with it, the same length of time: and in this way the uniformity of the sliver is preserved and maintained without suspending the operation of the machinery, and by which the original conception became useful and truly advantageous.

To show the importance of this improvement in the drawing head department unconnected with carding and ropeing with which it is usually joined; and to convey an adequate idea of the saving of labor effected, it may be stated that ordinarily twelve bats (eighteen may thus be done,) are passed through the drawing head at once, and these again are multiplied three times over after leaving the carding or railway drawing-head, six of these first bats are passed to the next separate drawing-head without railway, making a sliver of 72 bats; and these again are passed to the next multiplied by six making 432 bats in a sliver; and these last being again multiplied by six is 2,592 bats in a sliver; this last number being the number passing the railway drawing-head, while all the other multiplications amount only to 516. The result is found to be that the railway drawing-head saves about four-fifths of the whole labor of drawing.

But as this labor is usually, and it may be said, always associated with the carding and ropeing branches, satisfactory evidence is before your committee, showing that full twenty per cent is saved in the ordinary expense, in what is called the carding room department of a cotton mill by this improvement.

Its importance is further shown by stating also that by the census of 1840, the number of cotton mills in the United States were 1,240. Spindles 2,284,631; hands employed 72,119; value of articles made $46,350,453; capital invested in cotton factories $51,102,239.

There was another railway drawing-head on exhibition at the same Fair, by Wm. Bradley & Bro. of Paterson, N. J., both machines in point of mechanical workmanship were of about equal merits, and were substantially alike in their plan of construction, varying in nothing but in the mode of changing the speed of the front pair of rollers: that is, by sliding a cog wheel directly into a stud-gear instead of clutching the same as done by Mr. Leonard. Your committee think that Mr. Leonard's is most convenient and *best*, that Messrs Bradley's device is a mere change of form, without improvement or mechanical advantage; and your committee without judging of the rights of parties in the matter of privilege of invention, give the preference to Mr. Leonard's drawing-head.

Your committee beg leave further to say, that the railway drawing-head as improved by Mr. Leonard, forms an important *link* in the great chain of improvements in cotton machinery which have together effected an entire change in the mode and means of cloth-making in this and other countries; and as such is well deserving the award of a gold medal, hereby recommended to be awarded to it.

Improvements in Railroad Wheels and Railroad Trucks.

The improved *cushion wheel* for railroads exhibited by Mr. Fowler M. Ray, of the city of New-York, obtained the highest honors of the institution: and also a *railroad truck* by the same individual, obtained a diploma, certifying a gold medal heretofore awarded (in 1846,) as the *best* railroad truck on exhibition,

The present day is emphatically the day of successful experiment in the use of railroads; and every improvement in the construction of the running gear or fixtures for the same, is a matter of unusual importance to the world at large.

Railroad engineers have long since condemned superstructures for rails of solid masonry, as being too rigid, and have adopted more elastic structures; such structures have shown in their use a decided saving in the "wear and tear" of railroad cars and of railroad wheels.

The cushion wheel of Mr. Ray extends the elastic principle still further, and relieves the operation of the wheels on the track almost entirely from concussion, and effects a still further and much greater saving of "wear and tear." On this account, if from no other, it is worthy of the highest consideration by railroad companies; but while contributing largely as above to economy, the *cushion wheel* will also result in much ease and comfort to passengers by its increased buoyancy, overcoming much of the very disagreeable noise, common to other wheels on the track.

The wheel in question is made of two principal parts; the rim and the hub part, between which is inserted a belt of india rubber, (denominated the cushion,) insulating the two principal parts; and being elastic, does in fact act as an important spring in the system of india rubber springage employed by Mr. Ray in the construction of his truck; and it is believed to be the first attempt to introduce an elastic medium in the body of a railroad wheel, between the running surface and the axle; although attempts have been made with success, in introducing steel springs into the body of wheels for steam carriages on common roads—or rather of making the spokes themselves elastic and acting as springs; but such were intended for comparatively light burdens, and not calculated to resist lateral strains, and wholly unfit to stand the heavy burdens and severe lateral strains necessarily thrown upon railroad wheels.

In the ordinary railroad truck, with steel springs or single set of springs, one placed over the journal boxes; and sometimes the system is extended to a second set, or series between the bolsters; by the introduction of a spring in the body of the wheel, as done by Mr. Ray, another set or series is added to the system of springage, and by which the buoyancy is increased independent of its quality: but the quality of this India rubber spring has been the subject of high admiration. In the ordinary truck having steel springs, the same is required to be made with a view to a certain amount of burden to be carried upon it; a truck built for heavy, is unfit for light burdens, or *vice versa;* this is not the case with the India rubber springs, for, while it is a soft and mellow spring for one ton, it is

equally fitted from its nature, to act sensibly under a burden of many tons: its quality comparing with that of the air spring while it is less liable to get out of order.

The question of durability suggests itself as one of importance to be considered: the adhesive qualities of India rubber seem to guard against all fear of a fracture, for the particles of rubber are made to cohere by pressure; and as this spring acts by pressure instead of tension, the question is theoretically settled as to their durability; but the practical experience of continued and hard use for six or eight months was an evidence before the committee, and was the ground of unqualified belief in its durability.

The India rubber employed in the construction of this truck, and for the insulating belt of the cushion wheel, is of the kind known in the United States as "Goodyear's prepared India rubber," and in England by the name of "Vulcanized India Rubber," and has the quality of not being affected by heat or cold, and is therefore highly adapted to the purpose; or rather without this quality, the spring would be worthless.

But there are other considerations proper to notice in this place; it has been ascertained, that railroad axles, after running some 70,000 miles become greatly depreciated in their quality; that the particles of iron become crystalized or changed from a fine firm texture to that of a coarse and brittle character, and therefore are liable to fracture; that this change is due, either to *contussion* or to *currents of electricity*. If the former is the cause, the *cushion* greatly modifies the blow and nearly abates the cause; and if the latter is the cause, the insulating belt entirely intercepts the currents between the road track and the axle; the india rubber being a non-conductor of electricity; but your committee venture no opinion as to results growing out of this consideration—the theory is plausible.

The rim part of this wheel can be withdrawn when worn out without being at an additional expense of the hub part, which is to remain a permanent fixture and makes strongly in favor of this wheel. No objection to this truck exists in point of cost or weight, and the same commends itself to the consideration of railroad companies and truck builders as being a desirable article, whether for freight or passenger cars, particularly for the last named.

Improvement in Blooming Forges—Making iron direct from ore.

A model of an improved forge with specimens of iron was exhibited at the late Fair by Alexander Dickerson of New-Jersey.

The specimens of iron were submitted to the trial of reducing from a rod a quarter inch in diameter to No. 18 wire at three annealations, and the same found to be superior quality of iron.

There was also another model of a forge for the same purpose on exhibition; your committee gave a decided preference to the former, and for which a gold medal was awarded.

The subject of iron making is one of vast importance and demands an extended and careful notice.

It will be the design of your committee to point out several defects in the mode of procedure in this country of mountain woodland, which hitherto has attracted but little attention as relates to the most economical kind of fuel for reducing the ores, and the necessity of combining processes more extensively.

It will be found upon strict enquiry that iron making as a whole is seldom attempted; that usually a single operation in the process is embraced in one man's undertaking; we find the following in separate and distinct establishments, 1, owners of ore beds; 2, blast furnaces; 3, blooming forges; 4, puddling furnaces, which generally have rolling mills for reducing; 5, rolling mills without puddling furnaces, but sometimes in connection with wire mills; 6, wire mills sometimes in connection with screw mills; this being the case, the fact is made plain, that the owner of the blast furnace pays a profit to the owner of the ore-bed, the puddler to the pigmetal maker, or the rolling mill to the bloom forge, the wire drawer to the rolling mill, and the screw maker to the wire drawer; and further, in the course of these changes of ownership, this heavy material is in motion seeking a market, and thus loaded with an additional cost by way of unnecessary bills of transportation.

If but a part of these different owners put upon the article a profit of $10 per ton each, and this is usually the case, and then add for commissions on sales, and a sum sufficient to cover the cost of unnecessary freight, the native ore will have been loaded with at least $50 per ton in these superfluous items of expense; and the screw maker will have paid on wire at 6½ cents per lb., a tariff of 40 per cent.

That this is an important view of the subject, may be seen by the following estimated amount of iron wanted in the United States in the shape of wire, viz:

Telegraph purposes,	2,500 tons.
Wood screws,	7,500 do
Sofa springs,	1,000 do
Reed and card wire,	1,000 do
Tinner's use,	3,000 do
Iron rope bridges, &c.,	500 do
All others,	2,500 do
Total,	18,000

Being nearly one-fifth in amount as much as is wanted for railroad bars, estimated for the year 1847 at 100,000 tons. If we load upon these 18,000 tons $50 unnecessarily, or say $900,000 in profits, we may and shall have to compete with the English maker for a part of it; but if we load upon it in the form of profits but $300,000, (or about $25 per ton,) we secure the making of the whole amount to ourselves.

We will now see how these defects apply to the making of railroad bars at the present time. Take a mill, in the first place, having no connection with ore beds or blast furnaces, but which buys its pig metal in market as it best can, the price of which, at this time is about $25 per ton; to which, add 25 per cent for waste ($6.25) say in all for metal per ton of wrought iron, ---------- $31 25

2½ tons of anthracite coal, at $4,	10 00
Labor (2½ heats,) puddling and rolling, at $4.50,	11 25
Interest on $300,000 capital,	1 50
Superintendence, contingent labor and repairs,	5 00
Cost per ton in the first place,	$59 00

Take another mill, which owns the ore and blast furnaces:

Cost of pig metal as follows :

Two tons of coal at $4,	$8 00
" " ore at $2 50,	5 00
½ ton of limestone, $1 00,	50
Labor,	2 50
Interest on $100,000 invested in furnaces,	50
Incidental,	1 00
	$17 50

Add 25 per cent. for waste,	4 37
Pig metal, actual cost,	21 87
To which add the cost of making,	27 75
Cost in the 2d place,	49 62
Difference between the two cases,	9 38

Imported railroad bars are now offered in market at $52 per ton; it will be seen that in the first case stated—the American maker of this description of iron would compete with the foreign maker under a loss of $7 per ton, or on fifty tons per day the sum of $105,000 per annum. While, in the second case he would realize a profit of $2.38 per ton, equal to $39,300 per annum: this shows clearly the importance of concentrating processes, and having stated prices which range nearly with the present market; they show the position of mills for making railroad bars at this moment, and at the same time giving a practical illustration of the subject in question.

But there are other defects in our system of making wrought iron. We take the position, that in all cases, malleable or wrought iron should be made by the blooming process.

There exists vast quantities of woodland in our country available for that purpose, and instead of copying the English mode of puddling, which they from necessity are compelled to pursue, we should adhere to the use of the bloom forge, making for all purposes a good article of "charcoal iron." By pursuing this course, no doubt the bloom forge, like everything else which we Americans take in hand, would soon undergo improvements of an important character; but aside from any improvements, more than now exists in the bloom forge, let us see what can be done in the way of making railroad bars by the blooming process. The forge, (Dickerson's) at the head of this article, makes a ton of blooms with 200 bushels of charcoal, which at 5 cents, is $10 00

Two tons good magnetic ore, $2.50,	5 00
Labor per ton,	6 00
Repairs, interest, contingencies,	2 00
	$23 00
To which add ten per cent for waste,	2 30
Total for metal,	$25 30

To convert into railroad bars, as follows:

1½ tons of coal at $4,	$6 00	
Rolling 1½ heats at $4.50,	6 75	
Interest on $200,000 capital,	1 00	
Other expenses as stated heretofore,	5 00	
		$18 75
Total cost in bars,		$44 05

Equal to an increase of profits over the most econominal puddling process, as given above of $5.57 per ton, being for a mill making 50 tons, a difference of $83,550, while the iron, (best charcoal) is intrinsically worth for any other purpose than railroad bars, at least $10 per ton more, and of course would be preferred for that purpose.

There are in the county of Rockland, in this State, 50,000 acres of timber lands, worth $10 per acre, from which a crop of 30 cords of wood per acre may be taken, as often as every 15 years, making an average crop of two cords per acre annually, or say for the whole tract 100,000 cords. Two cords of wood is estimated to produce 100 bushels of charcoal, when burnt in proper kilns; 200 bushels of charcoal being the quantity now required to produce a ton of bloom iron, it will be seen that the perpetual yield of each two acres is equal to a ton of iron, and that the whole tract would be capable of making 25,000 tons of iron per annum; equal to about one-eighth of a supply of wrought iron for the whole United States at the present time, including railroad bars, being within fifty miles of the city of New-York.

Much larger tracts of woodland exist on Long Island, and the New Jersey shore, which lands are selling at a less price, but as these are not mountain lands, and may be cultivated, are not legitimately coaling lands; the mountain ranges conveniently near to navigable rivers, railroads and canals are only to be relied upon as coaling lands. Of these, at least one million of acres exist in the State of New-York, within convenient reach as above, and more than sufficient to make the whole supply of wrought iron for this country at the present time.

We design now to show some facts as it regards the location of iron works, and to show that even in the vicinity of New-York city, iron may be made with equal advantage and to a large extent,

and strange as it may appear, at no great advance in cost of the fuel over the additional cost of transportation of the iron from northern New-York, and less than the cost of freight from the Juniata iron country.

The interest on 50,000 acres of land, at $10 per acre, is 35 cents per cord, or $1.40 per ton of iron; to this add two cents per bushel, (the cost of freight by railroad from Ramapo, Rockland Co., to the city of New-York,) on two hundred bushels, is $4. Ore beds of good quality and of inexhaustible extent exist in several locations within the expense of $1.50 per ton freight to New-York, requiring say two tons of ore for one ton of blooms, freight on ore $3. These several items put together, amount to $8.40, while the freight from Keeseville, N. Y., is $7, per ton, and from the Juniata iron district about $10 per ton, the average being in favor of a location in or near New-York city; to this may be added the advantage of meeting the mineral coal for reheating, showing that charcoal iron to a certain extent can be made with advantage in New-York city. This estimate it will be seen leaves out of view the inexhaustible supplies of wood for charcoal from the mountain ranges, and rocky hills of the Atlantic slope, and the vast primeval forests of northern New-York. The fact is thus made plain to all minds, that in our own State we have an abundant supply of wood for iron making for centuries to come, and not exceeded by the most favored countries of Europe. We will here give an estimate for the manufacture of charcoal, say in Rockland Co.

Outlay for charcoal works.

3,000 acres woodland, at $10,	$30,000
13 coaling kilns, 21 feet diameter, 12 feet high, at $200,	2,600
8 wagons and harness complete, at $200,	1,600
25 horses, (or mules in part) at $80,	2,000
Store, stables, shanties, and smith shop,	3,000
Tools and other contingencies,	800
Total,	$40,000

Remarks.—One kiln will contain 20 cords of wood, and make 1000 bushels of coal every two weeks, there being 13 kilns, one is supernumerary—changing or being discharged, eight men being allowed for filling and clearing a kiln per day, and four men to look to the burning, day and night.

Expense for coaling for two weeks.

10 men,	cutting 240 cords of wood, at 50 cts.,		$120 00
12 do	colliers, at $20 per month, 2 weeks,		120 00
8 do	teamsters,	2 wagons collecting wood, 5 do hauling coal, say 5 m., 1 hostler, — $20 per mth.,	80 00
2 do	superintendents, at $3, and clerk at $2,		60 00
1 do	smith with repairs,		30 00
33 men.			
	25 horses' feed, for 14 days, at 25 cts,		88 00
	Interest on capital 2 weeks,		84 00
	Contingencies,		18 00
	Total,		$600 00
	Coal made, 12,000 bushels, at 5 cts., is,		600 00

Being 300,000 bushels per annum, and sufficient to make 1,500 tons of bloom iron.

A tract of 10,000 acres worked by about 100 men, and costing in outlay, $125,000, will produce one million bushels per annum, equal to 5000 tons of iron.

Having thus explained the defects in our system of iron making, by allowing it to be done too much in independent branches, by combining processes, it will be apparent at once, that in combining these processes, it will require concentration of capital to accomplish it; happily, the late law of our State for manufacturing incorporations opens a channel for this purpose, broad and deep, with perfect security to all concerned. But it does not follow that heavy capitals are alone necessary; there are such now employed in several of these distinct processes, sufficient to cover all the ground, (with proper arrangement,) here contemplated. The sum of $100,000 for making from the ore, either railroad car axles, anchors, wire, sheet iron, or merchant's iron generally; the sum of $200,000 for making nails or wood screws, and the sum of $300,000 to $400,000 for making railroad bars, can be employed as advantageously as sums of greater amount.

We would now further call attention as to the great advantage of combining processes, to the saving of expense, as in book-keeping,

superintendence, &c. &c; but particularly in avoiding numerous charges for commissions, guarantees, &c., consequent upon the frequent changes of ownership, by the system as now pursued; we give below an example of how seriously profits are reduced by having to pay said commissions. For instance, a manufacturer of wire in Rockland county sends to New-York 5 tons per day, upon which allowing nothing for commissions on purchase and sales, his profits are $20 per ton.

In the first place, however, the manufacturer buys his stock of raw materials, (coal and iron,) in Pennsylvania or elsewhere, and makes his draft on his commission merchant for the amount, and is charged, say 2½ per cent., for their acceptance of such drafts. The material is then manufactured and sent to the commission house for sale, is charged as follows:

Sold 5 tons wire at 6 cents, is----------		$600 00
Casting to be manufactured as follows:		
3 tons anthracite coal, at $4,----------	$12 00	
5 tons coiled rods, at $75,----------	375 00	
Labor, &c., per ton, at $20,----------	100 00	
Cost of making 5 tons, including waste, acc't,----------		487 00
		$113 00
Deduct commissions on purchase,----------	$9 67	
do do sales,----------	60 00	
		69 67
Nett profits to manufacturer,----------		$43 33

By the preceding, which is not an unusual case by any means, it will be seen that the man who lends his credit to the manufacturer has made one-third more out of the operation, than the man who has done the hard work. It shows very conclusively that the fewer the changes of ownership before an article reaches the consumer, the cheaper the same is brought to him.

A single commission is allowable; more is not, and under some circumstances would prevent the production of the article itself altogether.

The above hints on iron making have been volunteered and thrown out in this report, in the hope that they may receive the attention due the importance of the subject discussed. So far as these suggestions relate to the use of charcoal fuel for the first converting heat in making iron, it may be said that they are not merely theoretical. Blast furnaces for pig metal are at this moment worked in the city of Baltimore with charcoal made on the spot, and with equal advantage with those worked in the mountains, the ore being found convenient thereto. The combining processes, the saving of unnecessary freight, and the avoidance of the too frequent charges for commissions, are but the dictates of good management, and are in themselves simple and direct ideas, which require no multiplication of words to be appreciated and understood.

Adopt and pursue this concentration of processes, and the charcoal mode of procedure by the bloom forge, and New-York with her inexhaustible veins and beds of iron ore, and her equally inexhaustible mountain and hill ranges of woodlands, becomes second to no state in the Union for making iron.

Locating a portion of her iron works within reach of extensive veins of primitive and secondary iron ore, found in Dutchess, Rockland and Orange counties, at sites, upon or near the Hudson river, and within reach of cheap mineral coal for re-heats.

Drying apparatus for grain, flour, meal, &c.,

A machine (so called,) for the above purpose, was exhibited by James R. Stafford, Esq, of Cleveland Ohio; and for which *a gold medal was awarded.*

During the large shipment last year to Europe of Indian corn, and corn meal, heavy losses were sustained on cargoes sent forward in an unfit condition. Kilns for drying grain constructed of masonry, have long been in use by millers; but such kilns have not been available to the merchants in a case of emergency.

The steam apparatus of Mr. Stafford, is so compact as to admit of its being placed in the loft of a store-house, with as much convenience as a common stove. Several hundred bushels of grain can be passed through this apparatus per day—the heat being applied in the form of steam, the gluten is not scorched so as to change the flavor as is the case in other plans, and both the color of the grain, and the flavor is preserved.

This apparatus is composed of a small steam boiler or generator; a conductor from which leads into a hopper, (or a box opened at top and bottom,) containing numerous small horizontal pipes between which the grain descends; conductors open at the under side, and placed under each of the above steam pipes in such a manner as to take up the evaporations thrown off from the moist grain—removing it at once from contact, the drying hopper is elevated above the steam boiler by which the condensed steam is returned immediately back through an exit pipe leading into the same; and by which no waste of water in the boiler is sustained; and as no great pressure of steam is required, the apparatus is perfectly safe.

Through this apparatus a very considerable stream of grain may without interruption descend from a loft above, and be discharged upon a floor beneath with very trifling labor.

A modification of the same thing is adapted to the drying of meal or flour, equally ingenious and important in its results.

Your committee deem this apparatus one of the very best things exhibited at the 20th annual fair of the institute—the same is worthy of the notice of millers and merchants dealing in grain, particularly of the latter.

Ship Pump.

A pump for this purpose was exhibited by Messrs J. W. & J. H. Von Schmidt of New-York, and for which a *gold medal* was awarded.

This pump acts upon the centrifugal force principle, and having no valves, is not liable to choke with floating grain or other substances, and is thereby highly adapted to vessels transporting grain in bulk. Articles of much larger size than corn pass through this pump with perfect freedom, the same is capable of discharging a heavy stream, and in all respects a desirable article.

Cotton Compressing Machine.

Your committee visited a full size operating press of this kind invented by Perry G. Gardiner of the city of New-York, and for which a *gold medal* was awarded.

This cotton press is capable of reducing a bale of cotton to about one third the size of a bale as it comes from the plantation press, and is worthy of the notice of ship-owners.

Hot Air Furnace for Factories.

A plan for the above purpose was exhibited by Mr. Daniel Griffin of the city of New-York, and for which a *gold medal* was awarded.

Furnaces upon this plan having been put in operation, and econimical in consumption of fuel, and effective as a heater upon a large scale, your committee gave it their unqualified approval.

Improvement in Window Shutters.

A novel plan of metallic window shutters with rolling slats, was exhibited by Messrs D. D. Badger & Co., of Boston, and for which a *gold medal* was awarded.

The common window blinds or shutters are made to open or shut by swinging upon hinges for that purpose; in this case, the blinds are wound upon a roller, sunk in a recess in the wall at the top of the window to open, and the same by a reverse turn is unwound and let down, to close; this is effected by suitable rollers at top and bottom, to which at each end, chains so formed as to receive the slats, are attached, and by a vertical shaft placed within the casement, and having gearing to connect it to the rollers is worked by a wrench inside; these chains are so constructed and connected with the slats, as to have the effect to roll or turn the latter to open or close them; that by the two-fold action of winding the whole sheet of slats attached to the chains, and by the rolling of the slats, a close or open blind may be had, or a closed or open shutter may be given.

The material being all metal, and the machinery considerable to effect the above named movements, the shutter is somewhat expensive; it however is quite secure against burglars—is fire proof; convenient to open and close, and elegant in appearance; and your committee cannot doubt that they will be extensively introduced into the fronts of stores into large cities.

Steam Register and Vacuum Gage.

A most ingenious and valuable machine for recording the number of strokes of the engine, and giving the degree of the pressure, and state of the steam of an engine, was exhibited by Horatio Allen, Esq., of the Novelty Iron Works, in the city of New-York, and for which a *gold medal* was awarded.

This register is particularly adapted to Ocean Steam navigation; a steamship furnished with one of these instruments, has a faithful recorded enumeration of the number of strokes or pulsations of a steam engine from port to port, and a recorded, or rather *scribed* account of the state of steam while under way, (by the action of steam) during her entire voyage—no other person but the master of the ship, has access to the working parts of this instrument, the same is a perfect "tell tale," upon the doings of firemen and engineers.

A long sheet of white paper wound upon suitable rollers, is moved forwards from one to the other by the action of that part of the machine which enumerates the strokes—the piston of the vacuum gage is furnished with a pencil scriber, which is pressed upon the paper by a spring, the rising or falling of the piston traced upon the moving paper, shows constantly and progressively the state of the steam during the voyage—at the end of which, the sheet of paper may be divided into days, hours and minutes; and the doings of each engineer designated.

The machine is well calculated to insure greater vigilance in the performance of the duties of engineers, as well as the recording of data upon which projectors of steam engines may base calculations leading to greater perfection of the art of building marine engines.

Steam Tilt Hammer.

A hammer of this kind upon a new plan was exhibited by L. Kirk, Esq., Reading, Pa., and for which a *silver medal* was awarded.

The appelation of a "steam hammer," is applied to such as are acted upon directly by steam, without the intervention of causes to give the motion to the hammer.

The steam in this case, is applied directly under the handle of the hammer, and belongs to this class.

A steam cylinder and piston placed vertically beneath the handle of the hammer, at about one half the distance from the terminus to the handle itself—furnished with suitable valves, steam and exhaust pipe, and a facility by which the blow is regulated, and arrested at any point of its descent, constitutes all the machinery about this hammer; nothing can be more simplified or less liable to get out of order, and for all the purposes for which a tilt hammer is appropriate, such as forging blooms, hammering bars of uniform thickness,

plating swords and other thin articles, this is a very desirabe machine.

Hydraulic Rams.

Your committee remark, that there were three several water rams on exhibition, of nearly equal merits, for which all received the awards of *silver medals*, or a diploma certifying a medal previously awarded.

These machines are useful in agricultural districts; and are made to elevate water for the supply of house or barn, where small streams and brooks exist on a farm, or from a spring near a brook; a low head of water, and quite a small rill is sufficient to raise a supply as above several hundred feet higher than its source. The ram exhibited by B. S. Benson, Esq., of Baltimore, Md., is the same as heretofore exhibited, and is no doubt the meritorious pioneer of all others, and has been occasion of introducing the use of water rams extensively in agricultural districts. The ram by W. B. Douglass of Middletown, Conn., possesses the facility of regulating the quantity of discharge, to accomodate the same to the different seasons of the year; and also the means of cleansing it from sediments, without taking the machine apart. The ram by J. L. Gatchel of Elkton, Md., contains an improvement by which the mixing of the spring water, with the brook water is prevented, where the water of the brook is used for the power to elevate it, and spring water is desired to be thrown up; no farmer possessing a suitable brook, and contiguous spring, should be without one of these cheap contrivances for elevating water, and by which a supply of water for culinary purposes may be furnished for his house—either of soft or spring water, his barn-yard, garden for irrigation, and his pastures for his herds.

Munsell's Boring and Morticing Machine.

This machine was exhibited by Mr. C. H. Young of Painted Post, N. Y., and for which a *silver medal* was awarded.

There has been of late years a very great number of morticing machines brought out, and for a variety of purposes, they have been classified under the general appelation of "power, hand and foot machines," the first are particularly appropriate for large manufacturing establishments—the two last named for more general use. In comparing a "hand," with that of a "foot machine," experience

and continued use has shown the former is preferable; other things being equal, the foot machine has been found to fatigue the operator, more than a hand machine. In working a foot machine, the man is made to sustain his own weight, mostly on one leg from which he is likely to be fatigued more than the man who has legs at liberty, throwing the weight of his body or part of it through the medium of his hand and arm, to operate his machine.

The machine in question is of the kind called a hand machine, designed particularly for carriage hubs. Your committee have observed a quality in this machine not heretofore noticed in others, at least not so perfect; that is the arrangement by which the work is executed entirely and accurately without having been previously laid out—the index wheel being well designed to effect this result; the materials of which the machine is made, are mostly of wood, and of course, of cheaper construction, and quite portable. The operation of the machine gave entire satisfaction to the committee, possessing so many good traits, it is recommended to the confidence of such as take an interest in this kind of labor saving machines.

Wrought and Cast Iron Bridge.

The model exhibited by Solomon Whipple of Utica, N. Y., and for which a silver medal was awarded, possesses sterling merits.

The combination of the two kinds of metal are happily conceived; the chords or crashing parts of the bridge are cast, and the tension rods of wrought iron; the plan is wholly of iron, excepting the string pieces for railroad bars, or the planking of a common bridge, it has the merit both of economy and strength—two other models by the same exhibitor; one having a cast iron chord, sustaining string pieces by suspension rods, has considerable merit.

Mowing Machine.

Hitherto there has been but little success in attempts at machine mowing.

The machine exhibited by Wm. F. Ketchum of Buffalo, N. Y., and for which a silver medal was awarded—does its work upon the principle of shearing or clipping the grass, instead of cutting with a single edge, it has the merit of great simplicity of construction, and is a self sharpener operated by a single horse.

Judging from the testimonials shown us, we think the machine ought to be patronized by agriculturists.

Numerous other awards of gold and silver medals for highly useful improvements, and new inventions were granted and bestowed—many of which not having a general application are withheld in this report.

There were more than 300 exhibitions of machinery, of which about 150 received awards of medals or diplomas; two thirds of which were either new machines or improvements on old machines; no preceding fair of the American Institute having been so rich in the display of mechanical skill and science.

THOS. W. HARVEY, *Chairman.*

EXTRACTS

FROM

STATEMENTS OF EXHIBITORS.

JOHN M. MULFORD'S

Method of keeping Cows and making Butter.

I keep on an average thirteen cows and two two year old heifers, making fifteen young and old. My mode of selecting good cows for butter is this: When I buy or raise a cow I take two smooth glass tumblers, fill one of those tumblers about two thirds full of the milk of the new cow that I may have bought or raised, the whole cow's mess should be strained in a pan, and then put the tumbler two thirds full of it—then take in the same way of the mess of milk of one of my other cows of about the same age the other tumbler about two thirds full—set them both in the cellar together, if the cream on the new cow's milk is light and frothy, I dispose of her; if the cream is thick and solid on the new cow's milk, as it is on my other, that I know to be good, then I keep her for a dairy cow.

My pasture is mostly timothy and natural grass on low ground. In the spring of the year I feed a little grain to my poorest cows. From repeated tryings and weighings, I find the butter made from a single days milk will average 12 ounces of butter from each cow, from the first of May till the first of November,—earlier in the spring and later in the fall, I cannot obtain so much per day from each cow.

I use tin pans wholly for milk.

When the milk is thick we churn all the milk and cream together,—in warm weather we add a pail full of cold water, before commencing to churn. If the butter is too long coming while churning I add also, a little warm water. When the butter is gath-

ered in the churn, take it out and wash it with cold water till the milk is out—then salt it immediately, and let it stand in the cellar until the next morning then work it thoroughly till the pickle is worked out, and pack it in the pail or firkin—keeping it covered.

JOHN M. MULFORD.

Shawangunk, Ulster Co., N. Y., Feb. 21, 1848.

DAVID S. MILLS'

Mode of Cultivating his Farm for Dairy Purposes.

GENTLEMEN: At your request I give you an account of the crops raised the past year on my farm at New Town, L. I., as accounted to me by my overseer, Mr. Nathan Perry.

About the 30th of March last, we commenced plowing a twelve acre field for potatoes; when plowed, we manured broadcast with equal parts of cow manure and pond muck, putting 30 loads to the acre; cross plowed and harrowed it, then applied (as a trial to prevent rot) shell lime, to the amount of 80 bushels to the acre.

It then being in a desirable condition for planting we marked it out in drills, 3 feet apart, and commenced dropping the cuttings (pink-eyed-kidneys,) which had already been rolled in lime and plaster, using about 15 bushel to the acre, covered them with the plow, and in two weeks after, harrowed and cross-harrowed the field till level. As soon as the sprouts were 3 or 4 inches high we plowed through each row, and in another week we dressed the field with the hoe, and as soon as finished we again plowed them; they required no more attendance. On the 27th of July, we commenced digging our new crop. We found the yield less than anticipated, as the vines grew thriftily, receiving no blight, and from every appearance we were promised a handsome return. From the 12 acres we dug 1,455 bushels of merchantable potatoes, there being but few of inferior size, but their quality greatly aided in making up the deficiency, as they were very large and fine. I attributed the deficiency, to having used *too much* lime, as it caused the ground to be very dry. The field being cleared of the potatoes, we commenced plowing on the 31st of Sept. for wheat, and when finished harrowed it over, and removed all the stones that were to be found on its surface, then marking it out in squares of 27 feet, applied 18 loads of well rotted manure to the acre, (it being a compost of

horse and cow manure,) which we plowed in about 6 inches deep. The following week it was cross-plowed and harrowed, and seeded down with two bushels of wheat (white Flint,) and a peck of timothy seed to the acre, which was all harrowed in. On the 4th day after it was up and doing well.

The next field for cultivation was one of 7 acres, which the year previous was in corn. This we tilled for soiling purposes, using about one half for corn, sowed broadcast, the balance for oats and millet. The first half we prepared for corn, by plowing 6 inches deep, then manured, with 35 loads to the acre, of cow manure fresh from the cow stable, which was plowed in and harrowed, then cross-plowed and harrowed, and sowed with 4½ bushels of corn to the acre, which was covered by harrowing three times. The balance remained untouched about 4 or 5 weeks, when we prepared it as above, and used one half for oats, sowing 3 bushels to the acre, and on the remainder we sowed millet, 7 quarts to the acre. The ground being in good order, the crops grew rapidly, and soon were fit for the sickle. By the 18th of July, the corn had been cut and fed to our milch cows; when we immediately plowed and sowed for a second crop (without additional manuring,) and which proved as good as the first. When the first crop was exhausted, the millet and oats were fit for use: (I should probably here state, that we make it a point to have green feed for the cattle the whole summer, and continue as long as the season will permit, beginning with rye, early in May; then cutting clover, then corn, then oats and millet; by which time a second crop of clover is ready, which is followed up till the frosty season stops its growth, it being the latest green feed used in the fall.) I greatly approve of corn for soiling, as two crops can always be obtained, and should we find it advancing too rapidly in growth to be healthful, we mow what is remaining, and spread it out to dry and cure in some convenient pasture field; and after being thoroughly cured, stock it up for fodder in the winter, being careful to salt it well when stacking. When it is thus properly cured, I have always found that the cows are as fond of it as of *the best clover hay*, and will yield as much milk.

The above process of soiling, together with constant pasturage, is the maintenance for my cows during the spring, summer and autumn of every year; the cows being stabled at night, each has a feed of Indian meal and cut hay, wet with a pail of spring water. Keeping a dairy of 90 milk cows, (the milk of which is sold in your city,) makes our mode of farming differ somewhat from the

regular routine of farming generally, as we are compelled to shape our farming to our dairy purposes.

Returning to the soiling field, I would say, that when divested of its crops, it was plowed thoroughly, to be in readiness for tillage the ensuing spring.

Our next, or field No. 3, was a sod field of 15 acres, to be planted with white flint corn, it having been in grass and pasturage for five years. We commenced about the 24th of April, plowing our regular depth (6 inches) and harrowing till the ground was perfectly mellow; marked it out in squares of 3 feet 8 inches each way, manured by a compost of decayed vegetable matter, (mostly weeds) horse manure and charcoal-dust, the whole of which had been saturated with urine taken from reservoir convenient to cow stable, using a shovel-full to the hill. Commenced planting on 1st day of May. After the corn being up a few inches in height, it was plowed both ways, and in about three weeks it was repeated, then hoed, and received no more attention till gathered, the yield of which averaged 110 bushels of ears to the acre. We also had 3 fields containing 21 acres of yellow corn, planted in fallow ground, cultivated as above; one of six acres having been cut up from the bottom and drawn off, when the stubble hills were plowed out, harrowed, and the stubble carted to the barn-yard, the field being afterwards plowed, well manured, and sowed with wheat, finished 20th October.

Being presented with six ears of corn, after having finished planting, and having an uncultivated spot of ground, I resolved to give it a trial, and although late in the season when planted, we gathered from the above seed, *forty-one bushels* of ears, of which I send you a sample.

After corn planting, we sowed in a peach orchard of two acres, some Russia turnip seed, in drills about three feet apart, without manuring; and, owing to too much shade, and being trodden upon when gathering the peaches, we gathered but 109 bushels of turnips.

Harvest time being at hand, we commenced hay-making about 26th June; cutting 6 fields of grass, in all 45 acres, yielding 101 tons of hay in fine order, which was housed in loft of barn and cow stable; the whole of which had been consumed on the place by the stock, to the 16th day of this month.

Three fields of wheat having been ready to harvest for some days, we commenced cradling the next week. We cut 31 acres, most of which stood upright, and which has yielded an average of 25 bushels and 2 pecks per acre, weighing 63 lbs. to the bushel; gathered in good order, and housed upon each of the fields last mentioned. There had been applied 60 bushels of shell lime to the acre, at the time of seeding: the previous crop of two of these fields, was potatoes, and that of the third wheat

The clover and timothy grass grew finely after the wheat being off, each field having had 1 peck of timothy seed, and 12 lbs of clover seed sowed to the acre the fall previous; it was sowed lengthwise and crosswise, and promises a handsome burden next harvest.

The rye on field of 7 acres was cut and fed while green to milch cows, except a quarter of an acre left to ripen for seed, and yielded 10 bushels.

Fifteen acres was sown with buckwheat, 11th July, after the hay had been taken off, the sod was plowed, harrowed and rolled, and no manure applied; ripened and cut 19th October, and threshed as fast as gathered; the nett yield was 165 bushels.

I intended this season as heretofore to plant with corn, all the ground having grown buckwheat the previous crop, as I am satisfied that buckwheat is a preventive of worms that materially injure and destroy corn, and I think if farmers generally would drop 2 or 3 kernels of buckwheat in each hill where they plant corn, they never would have occasion to re-plant on account of destruction made by the grub or wire worm.

DAVID S. MILLS.

JAMES LEWIS'

Mode of making Butter.

My dairy consists of 16 cows of the common breed; the butter which I sent to the fair of the American Institute, which took the second premium, was made while the cows were fed on rowen, that grew on natural meadow, a mixture of timothy, blue grass and clover, no feed or roots of any kind being used; the milk was strained in ten quart pans in a cold cellar, and stood till thick for churning; all of the milk being churned with a machine by a sheep.

The butter was rinsed in cold water, salted with Ashton salt—taking great care not to over salt the butter, so as to destroy the flavor and richness which I think many do. The quantity made from the 16 cows, I cannot ascertain, as we used it in my family, which consists of seven persons; but the quantity sent to market from April 7th, was 1,536 lbs.

JAMES LEWIS.

Goshen, Orange Co., Jan., 17 1848.

JOHN HOLBERT'S

Mode of making Butter with Experiments.

In answer to the questions propounded by you in relation to the butter exhibited by me at the Twentieth Annual Fair, I will state that my cows are of native stock only; from the time they were turned in pasture in the spring, until they were turned off, had nothing but grass which was a mixture of clover and timothy, and for three or four weeks previous to making the butter exhibited, they were on gravelly land containing timothy mostly.

The butter I sent to the fair, was made from twenty-nine cows, about the twentieth of September: mode of managing as follows:

The milk when drawn from the cows, was taken in the cellar, and there strained in fourteen quart pails made of wood and tin; there remains until becomes thick or lobberd, then the milk is put in barrels and half churns, and the labor of churning is performed by a horse generally; churn about one hour, then the butter is taken out and washed in one water only, then salted with Ashton salt, and no other ingredient is used; but the salt generally worked from three to four times owing to the weather, when sufficiently worked is packed in firkins, and when becomes full a cloth is put on the butter, and then covered with salt and brine, then put away and remains so until about the tenth of November, then the cloth and salt is taken off, and the firkin headed up and sent to market, generally fetches from 18¾ to 25 cents per pound. About the first of December 1847, was offered 22½ cents, but did not accept of the offer, and yet remains unsold, (since sold for 24 cents.)

The butter I made during the last summer was sixty-seven firkins, the number of cows milked was forty, about one half of the season; but the drought was so severe I was obliged to part with eleven of them, to do the remainder justice, then milked twenty-nine the remainder of the season.

Experiments on milk and cows, June 9, 1847.

Cows.	Weight of milk one day.	Weight of butter.
No. 1.	37½ lbs.	1 lb. 12 oz.
2.	35½ lbs.	1 lb. 8 oz.
3.	33½ lbs.	1 lb. 15 oz.
4.	38½ lbs.	1 lb. 14 oz.
5.	32½ lbs.	1 lb. 14 oz.
6.	31 lbs.	1 lb. 1 oz.
7.	30 lbs.	1 lb.
8.	32½ lbs.	1 lb.
9.	33½ lbs.	1 lb. 8 oz.
10.	34 lbs.	1 lb. 12 oz.

Experiment on four cows, June 15.

1.	31 lbs.	2 lbs. 4 oz.
2.	28 lbs.	2 lbs.
3.	29 lbs.	1 lb. 8 oz.
4.	27½ lbs.	1 lb. 4 oz.

Experiment on forty cows, June 29.

Weight of milk from forty cows, morning mess 796½ lbs.: when churned, butter 23 lbs. Evening, weight of milk 627½ lbs.: when churned, had 24 lbs. of butter; which in all is 47 lbs. from 40 cows, which is averaging the cows one pound and seven-fortieths of a pound to each cow.

JOHN HOLBERT.

Chemung, Jan. 27, 1848.

MARTIN L. THOMPSON'S

Manner of keeping Cows and process of making Butter

In answer to your questions, the following is a true statement of my mode of manufacturing the butter exhibited at the "Twentieth Annual Fair."

I have kept the past season fourteen cows, from which I have made *twenty-one hundred and sixty-one pounds* of butter, from the first of April to the first of December, 1847. I have taken no pains with my cows giving them no feed of grain or root kind; their grazing has consisted of natural grass chiefly during the whole time.

The course I adopt in manufacturing my butter is as follows: the labor of churning is performed by two sheep, on a double wheel machine; the butter is taken from the churn and washed in two waters, salted immediately after with Ashton salt, and then washed again, then twice thoroughly worked, and is then fitted for market. The sum received for the butter above stated has amounted to five hundred and twenty-six dollars and thirty cents.

MARTIN L. THOMPSON.

Goshen, Orange County, Feb. 7, 1848.

JOSEPH BLAKESLEE'S

Mode of keeping Sheep.

In compliance with the request of the Institute, I proceed to answer the questions proposed:

My flock of merino sheep numbers about one hundred, which I divide into two or more flocks, as circumstances require, during the summer season. In winter I keep them in separate yards supplied with water giving them as much hay as they will eat, with the addition of about four quarts of corn and oats mixed, to the hundred sheep per day. The average weight is 3¾ lbs. per fleece. I am unable to state the price of my merino wool the past season—it having been sold with a lot of coarser wool.

JOSEPH BLAKESLEE.

J. L. RANDALL,

On the keeping of Merino Sheep.

During the season of grass, I give them plenty of pasture on dry land, (with plenty of salt,) and frequent changes when practicable; and during the seasons for feeding hay, I feed morning and night as much as they want, and also straw at noon of whatever kinds I have; also grain once per day, from six to eight quarts; rye, corn, peas, beans, or the equal in some other kind of feed; to one hundred sheep, I feed in racks and mangers under cover, and give them free access to water. My pure merino ewes, under the above treatment, have generally given over four pounds of clean wool per head; bucks, from five to eight pounds, with a few to nearly ten pounds, though generally fed some more grain. The wool from them sells of course for prices varying with the market. It was sold last June to Messrs. Kellogg & Farr, manufacturers at Baldwinsville, for fifty cents per pound.

J. L. RANDALL.

Lysander, Jan. 3, 1848.

OBADIAH ELLIOT'S SOUTH DOWN SHEEP.

In reply to your circular, dated 1st ult., addressed to me as one of the exhibitors at the twentieth annual fair of the American Institute, I have to state, that with the occasional intrusion of a mare and colt, and the constant feeding of an old sow, I kept three South Down bucks and two ewes, (my only sheep,) on two roods of mean grass pasture, and on that only, from April till October 13th, of last year, when they went for exhibition. Clip of washed wool averaged over four pounds each, sold at 28 cents per pound.

I believe I may state honestly that South Downs will live and thrive better on mean pasture than any other known breed of sheep in this country.

OB'H ELLIOT.

Middleham, Elizabethtown, N. J., Feb. 5, 1848.

CORNELIUS T. SMITH'S

Mode of raising Corn.

I give you a statement of the manner which I pursued in raising the corn I presented in competition for premium at the late fair of the Institute. The land was stiff sod of a sandy loam, which I turned under by once plowing; about three days before I was ready to plant, I harrowed it down and struck out my furrows, (so as not to turn the sod or disturb it at all,) 3½ feet from centre to centre each way, and put three grains of corn in each hill, which I watered and rolled in plaster before I planted; I put marl, out of the sand stone quarry on about 20 rows of it, which made it grow much faster than the other part of the field, (as I could see the difference distinctly until the whole got ripe,) I put a handful of ashes, of wood and coal mixed, on each hill. I gave it four plowings, the two first very light, the two last deep, and also two hoeings, but did not hill it up around the corn, and kept it clean from weeds; when it was about a foot high, I put about a teanspoonful of plaster on each hill, and as soon as the sets began to show themselves for the formation of the ears, I applied another teaspoonful of plaster on each hill, to which I give the credit of the extraordinary yield of corn. I planted $2\frac{3}{10}$ acres, of which I had 164 baskets full of ears of corn. The basket measures $2\frac{1}{8}$ bushels, which makes 184 bushels of shelled corn, or 368 bushels ears of corn. I also planted another field, which I treated the same as the first, and the yield was nearly the same. There was a difference, as this field was planted on corn stubble, where we had corn the previous year. I give you a list of the expenses below.

C. T. SMITH.

Nyack, Feb. 1, 1848.

Dr.		Cr.	
To plowing & harrowing, 4 days,	$6 00	By 184 bushels of corn, at 70 c.,	$128 80
To plow'g, 1 horse, 4 days,	5 00	By 4 loads of stalks,	15 00
riding marl, 1 day,	1 50	By poor corn,	1 50
hoeing and weeding, 7 days,	5 25		$144 50
ashes and plaster,	3 00	Expenses,	43 25
putting on ashes, &c.,	1 50		
seed corn,	0 50	Profit,	$101 25
cutting and shocking,	2 50		
husking and riding,	6 00		
interest on lands,	12 00		
	$43 25		

M. P. COON'S

Plan of Fencing.

I have from my youth been a practical farmer, and learned by practical experience that the "fencing of the farm," was one of the items of expenses which draw heavily upon the resources of the farmer, and in the county which I reside (Rensselaer, N. Y.,) I saw and felt that the expense was rapidly on the increase. Stone wall may be made only in certain localities. Timber in many regions is very scarce, and withal destructible. The quality required to build any or all of the different varieties of field fence, requires a heavy outlay and much labor in the procurement and transporation. In addition to this a continual expense to keep the different varieties under different circumstances, and on different soils in repair.

Not having time or space to enumerate the many different difficulties the farmer has continually to encounter from year to year by fencing his farm according to the present system, I will, however, state a few of the most prominent. First, the original cost; second, the destructibility; third, the difficulty on different soils; and fourth, location.

A worm rail fence cannot be made permanent on bleak places. A post fence will not retain its position on wet clay or swampy soils in the northern States, as they will "heave by the frost," and the pressure of large bodies of snow upon their sides, &c., &c., all of which difficulties I think I mitigate in part, and some I nearly obviate, as the description I shall give of mine will amply prove.

First. I use in every instance *iron posts;* these posts are so constructed, and weighing nine and a half pounds, have sufficient strength to resist a draught from the top, of 300 lbs. These posts are placed in a block of wood or stone; if in wood, the block is laid transversely, (in line of the fence horizontally in the ground,) the top being even with the surface; the same if in stone, thus obviating the difficulty of frost, as it is well known that any substance when laid in the ground and even with the surface, cannot be moved by the frost except and only as the frost expands, which is only upwards, perpendicularly, and as a natural result, when the frost disappears, the same position is still retained by the frost in the stone or block of wood. Thus an iron fence post is substituted for wood, and the action of the frost is obviated. The pannels to be attached to these posts are made of all wood or part wood, and part iron or all iron, on one and the same principle, and without the use of pins, nails, bolts or screws of any kind. When the pannels are of all wood, two bars of suitable wood of any required length 2 by 4 in size, are used, and wood turned pickets are inserted perpendicularly through holes bored through the bars; these holes are bored tapering, that is, larger at the top than at the bottom of the bars, and at any required size or distance. This fence may be put up permanently, or used as a hurdle fence. If the bars are of iron, suitable holes are cast for the insertion of wood pickets. There are a number of varieties of the above kind, either with iron or wood, bare or without, ornamental or plain. If all iron and ornamental, the same principle is observed, and the pickets may be made of cast or wrought iron, or iron wire may be used. If an all iron and hurdle or field fence is required, the posts are inserted as above described, and placed at the required distance, and iron rods or common wire is suspended from post to post, the rods being previously properly bent and shaped to be inserted through holes cast in the post for the purpose, and secured by a rod passing through the bend into the rods on the opposite side of the posts. There are also several varieties of this fence made. All the different styles are made of any required height or size, according to the uses which may be required, from the size of heavy and strong yard or field fence to the lightness of a verandah

railing. The prices vary according to quality, from 8 cents to $2 per foot. The common field fence may be made at from $1.50 to $2.50 per rod, either of iron or of wood pannels. In connection with this fence a stone drilling machine has been invented, cheap and of light construction, and is calculated to be used by hand, horse, water or any other power, and capable of drilling a hole in a stone of sufficient depth and size for the post in ten minutes, by hand power, (one man.)

Whenever a contract is made of any magnitude, a drill is always provided gratis, for drilling a sufficient quantity of stone for the fence ordered. Any orders directed to me, Lansingburgh, with diagram, location, angles, corners, and gates, will be promptly attended to.

I had forgotten to mention in its proper place, that gates, according to, and for each variety, are also furnished at the same rates.

MATTHIAS P. COONS.

COMMUNICATIONS.

CARE OF STOCK.

By R. L. Pell, of Pelham, N. Y.

The care of stock, sheep, &c., is of great importance to the agriculturist. It is the foundation of good farming, and requires more attention and knowledge than any other department. Our domestic animals are the machines, by means of which, hay and grass are converted into silver.

The three modes of feeding, by way of distinction are termed stall feeding, soiling, and grazing. Stall-fed cattle are those which live chiefly upon hay, cut straw, corn stalks, roots, grain, &c. Soiled cattle are those that are kept in a place of confinement, such as the straw yard, and nourished daily by green crops, cut and carried to them. Grazing cattle find their living in the open air, upon the rich and luxuriant pastures. 1st. The farmer who practices stall feeding, desires to increase the growth, and weight of his animal, therefore the food has two functions to perform, viz: to sustain the body, and at the same time to increase it. This food then is to be selected with great care as to its chemical contents. The animal by respiration is constantly giving off carbon to the atmosphere. This carbon can be resupplied by the judicious farmer; he must use a food containing sugar for this purpose. To increase the fat, he may feed the bran and husks of his cereal grains, instead of the meal which is customary, for the reason that the rich oily substances by provident nature have been placed near the outer covering of the cereals, to protect them from decay. You have often no doubt heard farmers say, and have said yourselves, there can be no nourishment in bran, it is so light, still you are surprised at the effect produced by its use upon your stock. I am in the habit of feeding it all summer

to my milch cows, which are never allowed to leave the yard. To supply the constant waste of the muscles, it is necessary that the food should contain gluten, and phosphorus is necessary to supply the waste from the bones; saline matters, chlorides, &c., to replace matters lost in the ordure. Your food therefore must contain a variety of substances to make up for the daily loss by respiration and excretion. You must not attempt to raise stock by the use of one kind of food, notwithstanding it may contain every requisite required by the animal to form his whole economy, for the reason that it cannot contain a sufficient quantity of each ingredient, to supply his daily requirements; by changing his food you change the proportions chemically speaking, and increase weight and fat as the natural consequence. The most important of the stock farmer's object is to make his animal fit for the butcher in the shortest possible time, and this can only be effected by mixed food, containing the necessary ingredients. Commence with a young animal and feed him food containing a large quantity of the phosphates, and his bones will become very large and strong. Feed him food containing gluten and fibrin, and there will be a great increase of his muscles. If you wish the animal to possess fine delicate bones, feed him with food containing phosphates in small quantities and your object will be gained. Starve your animals when young, and they never reach their natural size. Calves during the first four weeks of their existence, principally, form bones and muscles; it would therefore be advisable to place a small quantity of bean meal, or oil-cake in their milk: at four weeks old, if intended for the butcher, they require all the milk of the cow with its cream, besides linseed oil cake, linseed meal, &c. The reverse is the plan usually adopted in this state; the cows milk is given for 2 or 3 weeks, after which the calf is fed upon skimmed milk, which accounts for the stunted appearance of our stock when 3 and 4 years old. If you intend the calves for breeders or milkers, never stint them in their food, and they will grow to a great size and be an ornament to your domain. A full grown steer rejects in his excretions every 24 hours, about 23 oz. of nitrogen; to supply this, the animal must eat, according to a table prepared by Liebig, one or other of the following quantities of food:

120 lbs.	of turnips,	17 lbs.	of clover hay,
115 "	of wheat straw,	12 "	of pea straw,
75 "	of carrots,	12 "	of barley,
67 "	of potatoes,	10 "	of oats,
20 "	of meadow hay,	5 "	of beans.

Or instead of the whole quantity of any one of these, a half or quarter, or any other proportion of each may be taken, and the animal will probably be found to thrive better on the mixture, than if fed on any one of these kinds of food alone.

2d. Soiling. This is a mode of supporting animals on green food, cut every day, and given to them within certain enclosures; grasses of a quick and rank growth, should be had recourse to for this purpose, such as lucerne, clover, rye, grass, also turnips, carrots, &c. It is in my opinion the most advantageous way of keeping all descriptions of stock—the refuse matter left forms a valuable manure; the animals can be protected readily from all annoyances, shaded from the sun, kept in a state of rest, and without inconvenience to the farmer. I have practiced soiling horses, cows, oxen and hogs, for the last few years, and am perfectly satisfied that it is far more economical than any other mode. The manure made alone, has more than paid all the expense of their keeping. A cow will eat one fifth of her weight in green food in a single day, and about one fiftieth of dry food; for every 100 lbs. of hay a cow eats, she gives 216 lbs. of fresh manure; the roots she eats, yield about half the weight eaten, in fresh manure; the value of the manure for agricultural purposes, depends upon the quality of food fed the stock. Sprengel says, "that in the neighborhood of Hildesheim, the farmers give a higher price for the house manure of the Lutheran, than for that of the Roman Catholic families, because of the numerous fasts which the latter are required to observe." Twelve loads of the dung of animals fed (while fattening) chiefly upon oil-cake, was found to give a greater produce than 24 loads from store-stock fed in the straw-yard. Your cows when pregnant require very kind treatment, and an additional quantity of nourishing food, to sustain the unborn calf, and supply matter for the bones and muscles. If attention is paid to the matter, your cow will not be compelled to lay her own bones under contribution to serve the calf, and consequently when it is born, she will be in full condition. After the birth it will still be necessary to increase her food to sustain herself and maintain the calf. The kind of increase you wish the calf to make, must be your guide as to the quantity of food necessary. If you have an abundance of milk, kind and provident nature will effect all the objects you may desire, as it contains all the necessary requisites combined, provided the cow receives mixed food, out of which by chemical combinations to form curd for the muscles, butter for the fat, sugar for the carbon, and phosphates for the bones.

3rd. Grazing. This in my opinion is the most expensive mode of keeping stock; had it not been adopted in the United States, perhaps

600,000 miles of unnecessary fences might have been dispensed with, and a proportionable quantity of valuable land covered by them saved for agricultural purposes. Countless millions of weeds that have found protection beside them and sown their seeds, would have been destoyed by cultivation; and nameless sums of money, expended for material and construction, might have been appropriated to more beneficial purposes. The fact is, grass land intended for meadows, never should be depastured, for the reason that cattle during wet weather, poach the fields, destroy the fine grasses and leave holes behind them where water lodges, stagnates, and thus invites the growth of aquatic plants such as rushes, &c. It is a well known fact, that the cultivated grasses receive from the earth and atmosphere, during their growth, the oil, gluten and phosphates necessary to form the whole animal economy of the beast feeding upon them; they replace in his body portions which are daily removed by excretion, and imperceptible perspiration; 40 ounces of carbon are thrown off every 24 hours from a full grown ox, which must be supplied in the form of gum, sugar and starch through the medium of his vegetable diet. Therefore if you depasture your animals, you should manure the lands with such substances as are calculated to enrich the grass that it may have the desired effect upon them.

The milch cow injures your pastures more than any other stock, for the reason that she transforms all the valuable properties of the grass into fat, muscle, and milk, and therefore makes but a poor return of cold, valueless manure to the soil. Next, young cattle are of little if any benefit; as they form from their food, muscles, bones, fat, blood, &c. Animals that have reached their full growth, formed their bones, muscles, &c., only take from their food oily substances required to form fat, and return to the soil all the other fertilizing constituents of the grass. Pastures depastured by such animals, are constantly improved; though no manure may be added artificially to them, the droppings will maintain the land in continued richness, from the daily loss of their carcases. Still the waste is immense, as these valuable substances ferment, decay and pass into atmosphere by evolving their gases; and comparatively speaking, but small portions remain to fertilize the soil. If these animals were confined in the farm-yard, and grasses from such pastures cut and carried to them, the manure would be quadrupled in quantity and increased in quality, inasmuch as nearly all the volatile and saline substances would be saved by consolidation, with the assistance of charcoal-dust, and when required for

use would enrich large portions of land, instead of one field. The portion of all barn-yards where the manure is heaped, should be covered over, so as to prevent rain from coming in contact with it. Stock will do well under cover, open at the sides: on such heaps, 4½ feet in thickness, their liquid will be ample to keep it in a state of decomposition and fermentation. Such manure will be found of great benefit to clay soils, rendering them porous and incohesive.

The care of sheep, its habits and origin, is likewise a matter of great importance. The sheep, in its geographical distribution, is an inhabitant of every part of the known world, from the frigid to the torrid zone. In his natural state, he was a strong, muscular animal, inhabiting by choice high and almost inaccessible mountains, and covered by a thick coat of hair, which by long domestication has gradually been converted into wool: or, in other words, the animal had two kinds of covering, a soft, wooly substance near the skin, and a long hairy covering projecting over it. Cultivation has caused the hair to decrease, and wool increase to its present perfection, affording abundant materials for the personal comforts of man. There are numerous breeds, produced principally by climatic influences; the chief distinction between them is the different lengths attained by the wool; they are commonly, therefore, divided into two kinds, the short-wooled and long-wooled sheep. The most famous among the long-wooled variety, is the improved Dishley; and among the short-wooled, the South Down and Cheviot. It is singular that the sheep and ox should be so similar to each other in their general structure as they are. The bones of the sheep, in their formation, direction, number and arrangement, are almost exactly like the ox. The visceral parts are not dissimilar, and the number of stomachs is the same. Sheep bear crowding together better than any other domestic animal, for the reason that the dense covering of wool prevents an unusual expenditure of caloric; they therefore, under those circumstances, remain cool when other animals would suffer extremely, and are less liable to infection, and would not contract diseases of a cutaneous character, if they were not allowed an opportunity to rub their wool off. The diseases to which they are liable, though many, may be attributed solely to general treatment, climate and forage. On high ground and congenial pastures, no animal enjoys better health. Place them on low grounds, feed them on laxative or binding food, deny them sufficient exercise, or disturb them frequently, and you produce various and almost incurable diseases, such as rot, diarrhœa, staggers, dropsy, scab, &c., &c., &c.

The ewe is capable of breeding when seventeen or eighteen months old. After they have been twice sheared, I think they are more developed and would make better breeders. At eighteen months old, the ram may be employed to cover from 30 to 40 ewes, and the following season from 60 to 70. The young lambs should be brought forth about the middle or third week in March. When the lambing season arrives, the shepherd should pay constant attention to the ewes, and tender them immediate assistance if their labor is protracted, which is evinced by a decline of strength. After lambing, they should have a generous diet, such as carrots, turnips, potatoes, &c., if grass cannot be obtained, in sheltered situations, otherwise they will not be able to supply their young with milk, and the consequence will be a miserable, stunted, sickly lamb. At two weeks old, the males ought to be castrated, if they are perfectly healthy. At three months old, on high pastures, they may be weaned; on low pastures, at five months old, which in either case will allow the dam sufficient time to become fat, or fit for the ram. The lambs when weaned must be placed in rich pastures, that they may not feel the loss of the milk; towards fall they will require roots, and an abundance of sweet hay. If your sheep are in high condition, they may be sheared early in June; if lean, later. They should be washed 7 or 8 days previous to shearing, to free the wool from impurities. Large sheep, of rapid growth, will not afford so fine mutton as smaller sheep that have taken a long time to reach maturity: for example, the Leicester are less valuable than the South Down. In fact, sheep should not be killed until they are four and a half years old, when the meat becomes very dark, rich, and of fine flavor. Sheep that range over mountainous districts, and feed upon wild, short herbage, possess a flavor infinitely superior to those fed upon rich low land pastures, which are unfavorable for the production of delicious mutton, inasmuch as it becomes coarse-grained, excessively fat and rank in taste.

The manure of sheep is rich, dry, and contains about 20 per cent. of animal and vegetable substances, 13 per cent. of saline matter, and 67 per cent. of water. It ferments very readily when heaped up in the yard. I would prefer to depasture sheep for the benefit of the soil, for the reason that they spread their manure very evenly over the field, and tread it in, where it decomposes slowly, giving off ammonia and other enriching volatile products, which are absorbed by growing plants. It is peculiarly adapted to wheat, producing a grain abounding in gluten, admirable for the manufacture of bread, starch and vermicelli, but unfit for seed.

AMERICAN AND EUROPEAN FRUITS.

By Samuel Walker, of Roxbury, Mass.

To the Managers of the American Institute:

Gentlemen,—I have had the privilege for some years past, to visit the Fair of the American Institute and partake of its labors and its pleasures. Every visit has been made more interesting from the fact that there has been more to interest—more to study—more to admire.

The product of the farm, the dairy, the orchard, the garden and the green house have been so arranged and blended together at your exhibitions as to make it a "museum of Nature's richest gifts."

There I meet the darling child, the bashful maiden, the ardent lover, the generous father, the fond mother, the venerable grandfather and the beloved grandmother; the whole family group in joyous mood, to seek pleasure from the "spring of knowledge, and admire nature in the beautiful apple, the delicious pear, the delicate peach, the luscious grape, the modest violet, and "Nature's queen," the lovely rose.

There also I meet with the hard-handed but generous hearted farmer; the enthusiastic and enterprising horticulturist; Flora is also there, in her gay attire, made, if possible more beautiful by the delicate touch and exquisite arrangement by her fair votaries. In such company I love to mingle, and to be a listener while the scientific freely impart all the information their experience has given them in the art of cultivation. Here they scatter "broadcast" all they know on this subject; here heart meets heart, as hand does hand; here knowledge is reciprocally imparted; here an interchange of practical experience is made for the good of the whole; here self and selfishness is laid aside and the soul is unreservedly poured out, that the cultivation and improvement of the soil may be promoted, the fruits of the field, of the garden and the orchard, multiplied, for the benefit of the country—for the welfare of the world!

With such scenes before my mind's eye, I am rather disposed to digression; but feel that I must confine myself to that department which claims my more immediate attention, viz: Fruits. I therefore

present to your notice some American and European varieties, a few remarks on seedlings, with some other matters which I trust may not be altogether uninteresting, and thus throw my mite into your treasury of knowledge.

In submitting the following list of the best American varieties of apples, pears, and plums in juxtaposition with the best European varieties, it is not my intention to make any invidious comparison; on trial the truth, the whole truth will be amply sufficient for any purpose. I shall therefore leave the result in the hands of the best judges—the cultivators—simply stating that I shall select the best varieties from the catalogues of the New and the Old World.

APPLES.

American varieties.	*European varieties.*
No. 1. Early Harvest,	No. 1. Early Red Margaret,
2. Williams Apple,	2. Red Astrachan,
3. Benoni,	3. Sops of Wine,
4. Porter,	4. Gravenstein,
5. Pomme de Neige,	5. Ross Nonpareil,
6. Baldwin,	6. Dutch Mignonne,
7. Yellow Belle Fleur,	7. Cornish Gilliflower,
8. Newtown Pippin, (green)	8. Ribston Pippin,
9. Rhode Island Greening,	9. Herefordshire Pearmain,
10. American Golden Russet.	10. English Golden Russet.

I will not carry out the comparison further, but submit a list of American varieties, all of which are deserving of extensive cultivation, viz: Large Yellow Bough, Chandler, Fall, Harvey, Jonathan, Minister, Hubbardston Nonesuch, Rambo, River Saint Lawrence, (Corse's) Northern Spy, Esopus Spitzenburgh, Summer Queen and Ladies' Sweeting.

PEARS.

American varieties.	*European varieties.*
No. 1. Bloodgood,	No. 1. Citron des Carmes,
2. Dearborn's Seedling,	2. Passaus du Portugal,
3. Pratt,	3. Williams' Bonchretien,
4. Knight's Seedling,	4. Flemish Beauty,
5. Tyson,	5. Rostiezer,
6. Seckel,	6. Fondante d'Automme,
7. Cushing,	7. Bezi de la Motte,

8. Heathcot,	8. Doyenne blanc,
9. Andrews,	9. Louise bonne de Jersey.
10. Buffam,	10. Doyenne Gris,
11. Dix,	11. Beurre Diel,
12. Lawrence,	12. Duchesse d'Angouleme,
13. Columbia.	13. Glout Morceau.

In addition to the above I will add a list of European varieties of great merit, viz: Beurre d'Aremberg, Beurre d'Anjou, Beurre Bosc, Eyewood, Henry IV, Van Mons Leon Leclerc, Marie Louise, Winter Nelis, Paradise d'Automne, Passe Colmar, St. Ghislain, Vicar of Winkfield, Urbaniste and Echasserie. For baking, Belmont, Black Worcester, Catillac and Uvedale's St. Germain.

Plums.

American varieties.	*European varieties.*
No. 1. Jefferson,	No. 1. Green Gage,
2. Columbia,	2. Purple Gage,
3. Washington.	3. Coe's Golden Drop.

To this list of plums I will add the following American varieties, as worthy of a place in every good collection, viz: Purple Favorite, Huling's Superb, Imperial Gage, Lawrence's Favorite, Bleecker's Gage and Bingham.

Cherries.

The best varieties of American and European cherries are very dissimilar. I shall therefore submit a list of such varieties as I consider of the best quality, viz:

American Varieties.

Sparhawk's Honey, Downer's Late, Sweet Montmorency, Manning's Mottled, Downing Red Cheek.

European Varieties.

Black Eagle, Black Heart, Black Tartarian, Downton, Knight's Early Black, Bigarreau, Bigarreau Holland, Elton, Florence, Belle e Choisy, May Duke and Late Duke.

By the foregoing statement it will be perceived that among the well established apples and plums in this country, a majority are the

product of America. Of pears and cherries, the greater number of choice kinds have been imported from Europe.

I will now proceed to the second part of my subject, and notwithstanding my esteemed friend Thomas Bridgeman, Esq., has with ability and good judgment brought the subject of seedlings under the notice of the managers, yet I shall not refrain to state all I intended to do before I received Mr. Bridgeman's able report.

I am aware when a word of caution is to be spoken, or an error pointed out, that it should be done with candor and kindness; in that spirit the following remarks are submitted on

SEEDLING FRUITS.

My object is to point out an error, may I not rather say a weakness on the part of some cultivators of fruits, to over-rate their own productions; more especially so when they raise a seedling apple, pear, plum, peach, or cherry, having any pretension to merit. If their production is of the best quality and professes but a single point of superiority, say only a shade of color, or a slight increase of size, in addition to the good qualities of the most choice variety of that class of fruit in the present catalogues, that alone will commend it to other persons and they will meet out its praise in due season.

No seedling should be recommended for extensive cultivation until it shall have proved *superior in some respect* to the variety it most resembles. For instance: if any person shall raise a seedling plum one-fourth larger and equal or superior in flavor, more beautiful in its appearance, and more productive than the Green Gage, then the new variety would soon find its way into every good collection of plums. The same remarks will apply to the Newtown Pippin apple. The person who shall be so fortunate as to raise a seedling apple of equal flavor, better color, the tree more thrifty and productive than the green Newtown Pippin, will have accomplished *something worthy of record and a name.* But cultivators, like young, fond mothers, are apt to consider their production to be a "none-such:" time, alas! often convinces them of their mistake; and, when too late, they find they have only deceived themselves.

This subject, fraught with so much to benefit the community, if properly directed, is worthy the supervision of the managers of the "American Institute." I therefore hope, and would respectfully recommend, that it have their continued fostering care and attention.

In this land of fair skies, comparatively little has been done in the cultivation of the grape. Dr. Underhill, of Sing Sing, it is true, has done much as an individual, and done it well. But, *grapes of the very best quality* ought to be in our markets in abundance for home consumption and exportation. When the people generally shall understand that the *best food* and the *best medicine*, is to be found in fine *ripe fruit*, and more especially in the grape, then the Black Hamburgh, the Muscat of Alexander, and the Black Saint Peters, will take the place of the Isabella, Catawba, and Sweet water, and those choice varieties will appear in our markets daily during the season. To insure an abundaut supply, the cultivator must be remunerated for his labor; do this, and there will soon be competition, and that will reduce prices. The best foreign varieties can be raised with proper attention, under glass, with little or no fire heat. I will venture an opinion, that within twenty years from 1847, the Black Hamburgh's (the prince of grapes,) will be sold in New-York, Boston and Philadelphia markets at twenty-five cents per pound; one pound of which is at any time worth to those who love fine fruit—and who does not? at least three pounds of Isabella. The gentlemen of the New-England States understand this subject, and so do the gentlemen of New-York, New-Jersey, and Pennsylvania. Who, I would ask, has produced finer grapes than Roswell L. Colt, Esq., of Patterson, N. J.? Mr. Colt has presented bunches and berries for exhibition at the fair of the American Institute, that would grace Covent Garden Market.

The *seeding grape* raised by Mr. Colt, and presented to the managers the present season, will probably prove deserving of a place among the best foreign varieties; I anxiously look forward for an opportunity to further test its qualities—a committee on the part of the institute, to visit the grapery of Mr. Colt, to examine the vine, ascertain its character and its history, I think may come within the duties of the managers; might be gratifying to the gentleman who produced it, and beneficial to the public.

While on the subject of grapes I will with your permission, relate what was communicated to me at the fair by a gentleman of New-York; he stated that he was the owner of an Isabella vine which produced an abundance of fine fruit, having more fruit than his family could eat, as it became ripe; he was anxious to preserve it for future use, and adopted the following method to keep it, viz:

Having prepared the bunches by removing all the defective and unripe berries, he procured new flower pots of suitable size to hold

each a bunch of grapes; at the bottom of the pots he placed several pieces of broken oyster shells, or other suitable material to give good drainage; into each pot thus prepared, he held one bunch in an upright position, keeping the lower berries about half an inch from the draining, filling the pot with dry, clean, fine house sand, in such a manner that every aperture between the berries was closed; completely covering the fruit and stem, then watering the pots as he would have done had they contained plants, he put them into a dry room out of the reach of frost; from time to time he gave water sufficient to keep the same moist. In this manner according to his statement, the grapes kept plump, sound and retained all their fine flavor for several months.

The method is simple and cheap, it may succeed; had I been at home, I should have tried the experiment, I intend to do so another season.

If I have in this communication presented to you, and through you to the public but a single thought that may interest or stimulate the cultivation of fruit, or the tiller of the soil; then gentlemen I shall have an additional cause to rejoice that I have been a visitor at the American Institute, and that I am permitted to subscrbe myself.

Your devoted fellow labourer,

Friend and ob't servant,

SAMUEL WALKER.

To T. B. WAKEMAN, Esq., *Sec'y American Institute.*

Roxbury, Mass., Dec., 8 1847.

BLOOMINGDALE ASYLUM FARM.

NEW-YORK, *Feb.*, 20, 1848.

T. B. WAKEMAN, ESQ.,

Sup'g agent of the American Institute.

Dear Sir—Circumstances have recently brought within my observation, the situation and condition of the "Bloomingdale Asylum."

The asylum has 40 acres of land, 10 of it in wood—including buildings and immediate inclosures, perhaps about 30 acres under *cultivation* as garden and farm; I was so much pleased, and in particular with the management and produce of this branch; and thought it so honorable to the governor of the hospital, I sought for and obtained a copy of the summary of its *Dr.* and *Cr.* amount; I hasten to communicate the same to you, believing it will be an *exhibit* of great usefulness to *the American Institute.* It illustrates the benefits, and the profits which will arise from the proper care and *cultivation* of the soil; it shows what you might expect to accomplish, if the legislature in its wisdom should grant the *petition* of the American Institute, to establish "*an agricultural school, and experimental farm,*" near this city.

I feel the exhibit enclosed is a volume of very useful information, it is *seed* from which with suitable *cultivation*, agriculture may raise very profitable crops.

Truly Yours, &c.,
JAMES TALLMADGE.

Statement of the products of the Boomingdale Asylum Farm, of 30 acres, under cultivation, with the market value for 1847.

Potatoes, 1952 bushels (sound,)	900	bushels	$0 75	$675 00
Sugar beet,	180	"	37½	67 50
Blood "	100	"	50	50 00
Turnips,	460	"	31¼	143 75
Carrots,	28	"	50	14 00
Parsnips,	120	"	50	60 00
Onions,	45	"	75	67 50
Corn,	150	"	37½	56 25
Egg Plants,	20	"	50	10 00
Radishes,	125	"	1 00	125 00
Beans,	120	"	50	60 00
Peas,	65	"	75	48 75
Pumpkins,	75	"	37½	28 12
Squashes,	130	"	37½	48 75
Spinach,	210	"	75	157 50
Asparagus,	40	"	3 00	120 00
Tomatoes,	140	"	50	70 00
Cucumbers,	100	"	75	75 00
Nasturtium,	1	"	2 00	2 00
Peppers,	4	"	75	3 00
Rheubarb,	52	"	2 00	104 00
Citron melons,	75	melons,	10	7 50
Celery,	2500	heads,	3	75 00
Cabbages,	3000	"	4	120 00
Leeks,	1000	"	½	5 00
Salsify,	2000	"	1	20 00
Lettuce,	4000	"	2	80 00
				$2,293 62

Hay,	40	tons,	$10 00	$400 00
Pork,	1296	lbs.,	6	77 00
Butter,	663	"	25	165 75
Milk,	4488	gallons,	16	718 08
Eggs,	303	doz.,	12½	37 88
Poultry,	150	lbs.,	6	9 00
				$1,308 47

Fruits.

Apples,	200	bushels,	$0 50	$100 00
Pears,	20	"	1 00	20 00
Cherries,	150	"	1 00	150 00
Currants,	25	"	1 00	25 00
Peaches,	15	"	1 00	15 00
Grapes,	1200	lbs.,	6¼	75 00
Strawberries,	8	bushels,	2 00	16 00
				$401 00

Farming Department in account current with Bloomingdale Asylum.

Dr.

To *farmers' wages,	$781 00
" do board,	520 00
" implements,	20 80
" †manure,	311 00
" live stock purchased,	191 38
" grain, ground feed, &c.,	205 64
" balance,	2,251 27
	$4,281 09

Cr.

By amount vegetables,	$2,293 62
" hay, milk, &c.,	1,408 47
" fruits,	401 00
" live stock sold,	178 00
	$4,281 09

* 5 in summer; 4 in winter.

† Purchased in addition to that made on the farm.

CULTURE OF WHEAT.

To the American Institute:

My father, Elisha Nash, of Hampshire county, Massachusetts, some years since, sowed two fields of spring wheat the same season. The soil on which it was sown, was formed from the decomposition of granite, mica slate and other primitive rocks.

The first field was located on rolling land, near the crown of the swell; it contained about one-third of an acre by measurement. It had been cropped for several years previous, alternately with Indian corn and potatoes. The land was in fair tilth, though not remarkably rich, it was good mellow tillaged land, and nothing more.

In the spring of the year the land was prepared for a crop of wheat and it produced a remarkably large yield by the acre. There was gathered from it full eighteen bushels of sound wheat, free from smut or disease of any kind. The straw grew large, of a golden bright color. The wheat when ground, produced flour of an excellent quality. The berry of the wheat was plump and the heads on the straw were heavy and contained from sixty to eighty kernels of grain in the single head.

Granite and mica slate and primitive rock soils are usually unfavorable to the growth of wheat, and a very large crop from this piece of land was not anticipated. The undertaking to raise a crop of wheat from this soil was more an experiment than otherwise, but it bountifully rewarded the labor and expense of the culture.

Before plowing, there was carted and spread over the ground about twenty loads of manure, or soil taken from under two stables where cattle had been housed several years This soil appeared to have been strongly impregnated with the urine from the stables. The manure thus acquired being spread over the land, was plowed under at the first plowing. The land was cross plowed by a light plow. The field was then sown with fair red spring wheat, and then harrowed in. The wheat sown on the field was prepared in the following man-

ner: About two bushels of wheat or more was first taken and put into an empty hogshead, with one head out, and clean water from the well was pumped into it. The wheat was subject to frequent changes of the water, and the whole kept continually stirring during the operation. This brought all the oats, cockle,* and the light diseased kernels of wheat to the surface of the water. They were carefully skimmed off and put into a pail for provender. The first running of the water when drawn off, was dark and apparently colored by much of the wheat being more or less diseased by the smut. Then about eight quarts of clean slaked lime was mixed with the wheat. The process of washing and rinsing was continued until the water ran off free from all impurities. The whole with the lime stirred into it was left in the hogshead over night, which produced the effect to moisten and swell out the kernels of wheat full and almost ready to burst open. In this state of things the wheat was too damp to handle, and common wood ashes, made of oak, hickory or maple, being the fuel used by the family, was mixed and stirred into the wheat until it became dry enough to handle. The wheat thus mixed with ashes and lime was immediately sowed and harrowed in.

The quantity of wheat thus sown would equal about six bushels to the acre. The field of wheat when it came up, looked well; it was of a dark green color. Neither the worm, fly, nor the weavil attacked it. The time of sowing was in the latter part of April or the first of May. The seed procured for sowing had been strongly tainted with smut. Yet the new crop showed that the smut had been completely eradicated from it, and the berry of the wheat had much improved in size and whiteness of color.

The health and vigor of the straw was such that the wheat did not lodge in the field, though the growth was remarkably stout, nor did the mildew attack it, and the yield was the greatest I had ever known or heard of before.

This field was cropped the following year with Indian corn, and the yield was large and bountiful.

The second field of wheat contained about one acre. It was sown at the same time of the first and with the same seed, but without manuring. This field was also a granite and mica slate soil, and had the year before been planted with a crop of Indian corn and manured with the manure from a hog pen, put into the hills at the time of the planting. The crop of wheat was good. When the field was

* *Lolium Zizania*—A kind of Poppy.

sowed, one half of it, the north side, was sowed with the washed wheat, into which lime and ashes had been mixed as above mentioned. While the south half of the field was sowed with the same kind of wheat without washing it, or treating it with lime, ashes, or any thing else.

The result was, that the straw and the wheat on the north side of the field grew up fresh, clean, and with a full and heavy berry, and yielded at the rate of about twenty bushels an acre. The south half of the field almost failed of a crop, not yielding more than ten bushels to the acre. The growth of straw was sickly and mildewed; the kernels of the wheat were small, and most of them apparently diseased, and many of the heads were blighted with smut.

The wheat could not be ground into palatable flour, without first thoroughly washing it. The soil of this last field was warm; the slope descended to the south east. The land was in good tilth.

I have the honor to be,

Your obedient servant,

ALANSON NASH.

New-York, December 25, 1847.

DESCRIPTION OF COE'S TRANSPARENT SEEDLING CHERRY.

This tree came up in the spring of 1824, with a lot of others, from seed planted the previous season by the undersigned, and now stands in his garden; It matured without grafting or budding—the fruit therefore is original, and unlike any known. When ripe, it is large, fair, free from defect or aptness to rot, and never stains. Its flavor is sweet and delicious and though the pulp is very rich and delicate, the fruit keeps fresh for several days, and endures transportation without injury. It ripens early in June, and unlike other kinds, it furnishes fruit in perfection usually from three to four weeks. The fruit is remarkably round and regular in form, resembling somewhat that of the duke cherry, "skin thin, wax-like of a very delicate pale amber, nearly covered with pale cornelian red in the sun, and marked with delicate pale spots, which give it an unique appearance. Stalk rather short, set in a depression of moderate depth. Fleah very tender, melting and jucey, with a delicate but sweet and excellent flavor." This description as above quoted, is taken from "*Downing's Horticulturist*" of August, 1847, which contains a narticle highly commendatory of this fruit from facts furnished by a brother of the editor who saw the tree last season when its fruit was ripe.

The tree is thrifty, has a beautiful form, is very hardy and unusually productive. Having never parted with any trees or grafts of this variety, until some eighteen months since, I am now chiefly its possessor and have a large quantity of thrifty young trees on my grounds which are offered for sale.

CURTIS COE.

Middletown, Conn., Feb. 23, 1848.

CHINA GRASS CLOTH.

The following from the supplement of the Hongkong Register, No. 42, on the subject of China Grass Cloth has been forwarded by our correspondent for the benefit of the Institute. As it refers to a new staple that may perhaps be advantageously introduced into our country, it is thought worthy a place in the annual report.

CHINA GRASS CLOTH.

Glancing our eyes over the scientific periodicals received by the last mail, we observe that some degree of attention has lately been bestowed in England on the textile fabric commonly known as the China Grass Cloth. Attempts have been made at Leeds to manufacture cloth from the raw material worked up with an equal proportion of sheep's wool. The experiment is yet too much in its infancy to admit of its success or otherwise being pronounced upon with certainty, but it is said that one of the greatest difficulties has been overcome, namely, the possibility of felting. Mr. Horsfall, a manufacturer at Leeds, appears to be taking considerable interest in the matter, and is endeavoring to collect every information relative to "this new and valuable article of importation;" amongst other particulars, as to the quantity consumed in China, whether the local consumption is equal to the present production, so that in case there was a large export trade, it would be necessary to grow more than is at present cultivated. "It is well known," he observes, "that little credit can be given to statements made by the Chinese themselves of the production or consumption of an article in general use by them, but it is generally known to foreign merchants resident in China, that this grass is consumed by the vast population in immense quantities, and, in its various degrees of quality, may be found in almost every description of fabric, in the largest cables of their junks, and even in the choicest textures of clothing worn by the luxurious classes."

Mr. Horsfall has obtained a few particulars from several respectable merchants in China, regarding the habits of the plant which

yields this fibre, but neither the native nor botanic name is given, nor even the class to which it belongs, so that we are unable to say *with certainty* whether it is to be met with in any part of our eastern possessions, or whether we are in a position to make the manufacturer at home independent of China for this material. He adds that the stock at present in importer's hands in England does not exceed six hundred bales.

With a view to solve this doubt in our own mind, we turned to Fortune's "Three Years Wanderings in China," naturally expecting to meet in a work written by a professed botanist, and who was sent to that country expressly to gather every information connected with its vegetable products, some detailed and satisfactory account of this useful plant. We have however been disappointed, for he merely offers an incidental remark regarding a plant which may possibly be that yielding the material from which the grass cloth is made, but we have no certain data to establish it as a fact, seeing that he does not allude at all to any finer fabric made from it, but merely observes that, "there is a species of *Urtica* (nettle) both wild and cultivated, which grows about 3 or 4 feet in height, and produces a strong fibre in the bark, which is prepared by the natives and sold for the purpose of making ropes and cables." Mr. Horsfall it will be seen by the above extract, remarks that the same plant which gives so fine a fibre, yields likewise a substance sufficiently strong for manufacturing, into the largest cables. But this allusion by Mr. Fortune to a fibre prepared from a species of the nettle tribe is interesting in another point of view, because it assists in confirming an opinion expressed by Dr. Roxburgh more than forty years ago, and which opinion was based on information received from a friend, a resident of Canton, that the grass cloth of China is made from the same plant that yields the fibre called *calovee* by Marsden in his History of Sumatra. Now this *calovee* is also made from a shrubby species of nettle, to which Dr. Roxburgh has given the specific name, *tenacissima* because of the great strength of its fibre, the strongest indeed with one exception, of all the vegetable fibres, Europe hemp included, which he subjected to experiment. And while he thus bears witness to the strength of the fibre, he speaks also most favorably of its beauty, softness and fineness. He found however some difficulty in preparing it, and was obliged to adopt a different process to that recommended by Marsden. The plant was first introduced into the Botanic Garden, at Calcutta, by Mr. Ewer, the governor of Bencoolen, of which place it is a native; it is likewise

found in nearly all parts of the Malayan Archipelago. So readily does the plant grow here that Dr. Roxburgh was enabled, in one year, to rear above one thousand from the four received from Mr. Ewer. He says it is as readily cultivated as the willow from cuttings, throwing up numerous shoots as they are cut down for the fibres of their bark, which may be done, about three or four (rarely five) times every year, if the soil is good, and care taken of the plants.

Dr. Roxburgh obtained a further supply of these plants from a friend at Penang, where it is known by the name Ramy; the Malays he observes, use the bark for sewing thread and twine, and for making fishing nets; "but the quantity is so small that they require for these purposes, that they have not had recourse to any particular mode of stripping or cleaning it; they merely steep the shoots in water for 10 or 12 days, and then peel off the bark and dry it in the sun. I have *heard* that the thread is injured by salt water, but I do not think the account I have had of the circumstance is to be depended on, and certainly from the nature of the plant, the facility with which it appears it may be cultivated to any extent, the great strength of fibre, and the threatened scarcity of ropes for the use of the navy, it is worth while making experiments on it." Col. Low, in his dissertation on Penang and Province Wellesley, published thirty years after the above remarks were penned, alludes to the same plant, and by the same name; (*Ra-me Ra-me,*) as yielding a sort of hemp, and used for the same purpose, and he observes that it might be easily manufactured into the linen which in China is called grass cloth; "the Chinese here,"—he adds—"call the plant *cho*, and allege that it is the same as that which grows in China, where it is used for making the cloth just mentioned. This same description of nettle is indigenous also to the Philippine Islands as we learn from a work in the Spanish language, compiled by Father Manual Blanco, and published ten years ago at Manilla, under the title "Flora de Filipinas." As the writer likewise alludes to the circumstance of this plant being supposed to be the same that yields the grass cloth of China, we think it as well to give the following translation from his work, for which we are indebted to a friend:—

"This plant is common in the northern part of the isle of Luzon, and in the Batan islands, attaining the heighth of one yard, (vara) or more; the prepared bark is spun with thread and woven into cloth, from it is made it is said, the celebrated linen of Canton; of this I have been assured by many persons, but when in the north of

the island of Ilocos, I learnt respecting the cloth of the Batan island, that it is made from a plant named *labnis* or *lapnis*, as I have often noticed a singular and unexpected coincidence in the names of plants even of remote countries; I was led to suspect that the plant employed for the above named fabric, must be the *napœa*, called also *lapnis* in—?—(tagalos,) and not the urtica nivea, (U tenacissima Roxb.) it remains for further investigation to solve this doubt."

We find on further investigation, that the plant grows abundantly in the Shan states; Col. Burney when resident at Ava, sent a quantity of the fibre to the Agricultural Society, and mentioned that the Shans use this material in manufacturing every kind of cordage, and weaving a stout kind of cloth, of which they make bags, it is called *pan* by these people; this information has since been fully confirmed by a late traveller in that country, Mr. Landers, whose untimely death in the neighborhood of Zimmie, may be in the recollection of our readers; that gentleman informs us, that though the Shans possess several other fibrous yielding plants, they neglect them entirely in favor of this particular description, which in consequence of its great strength, they employ for every purpose; he moreover mentioned that it can be and is frequently converted by them into the finest sewing thread, and for other domestic uses. If the plant is not indigenous to the Tenasserim provinces, its introduction there from the Shan states is well worthy of attention, that it is common to Assam, (where it is known as the *Rheea*,) we have the authority of Major Jenkins, who communicated the circumstance upwards of ten years ago, to the Agricultural Society, and forwarded them specimens at the same time. From that officer's letter published in the third volume of the transactions of the society, we learn that it requires a very limited degree of cultivation in that province, where it occupies highlands of little or no value.

But coming more to the westward and nearer the presidency, we learn from Buchanan's statistics of Deriagepore, that this nettle is cultivated in that district, that the bark is used to make a kind of hemp for fishermen's nets, and it being the strongest material that can be procured, it is also used in making rope for tracking boats; Buchanan adds that the native name is *Kankhura*, and that he has not seen it anywhere due except in that district, but Roxburgh states that it is also cultivated in Rungpore, where it goes by the same name, from which it is not improbable that the plant is to be met within other of the northern and eastern districts of Bengal.

Assuming therefore this nettle to be the plant yielding the fibre from which the China grass cloth is manufactured—and we think the details above referred to, if not actually confirming at least render it highly probable--it will be observed that we have the means of providing the raw material very largely for export, should there be any great demand for it on the part of the English manufacturers, it is not unlikely, seeing that it has only been employed hitherto for the most rough and common purposes, that there would be a little difficulty at the outset in preparing it in a manner fit for the manufacturer's hands, but this would no doubt be readily overcome when the cultivators learn that a superior mode of preparing the fibre will make it more valuable, and give them a greater profit; under any circumstances the subject is worthy of farther investigation on the part of those interested in such matters. If we are able to obtain any further particulars about it that may be relied on, we shall give them publicity, being of opinion that the article may ere long be generally employed for manufacturing purposes, and in that case it were better if the plant be indigenous to any part of India, that it should form an additional export article from hence, than that the manufacturer should be dependent for it on a foreign country.

HEMP.

By Lewis Sanders, Kentucky.

To Mr. T. B. Wakeman,
Cor. Sec'y American Institute, New-York.

Sir—The first settlers of Kentucky cultivated hemp for domestic use. Coarse fabrics made from it are known to be more durable than if made from flax; four hemp shirts will last a laborer longer than six made of flax. More than fifty years ago rope walks were established, making plow lines, bed cords, and cordage for boats.

About forty years ago, the manufacture of cotton bagging was commenced, causing an increased demand for hemp. Previous to the war of 1812, there was more hemp produced than was required for the manufacture of bagging and rope. The surplus was then made into *spun yarns*, shipped to the eastern ports, and there made into cordage for the merchant service. The number of bagging factories were greatly increased after the war, using nearly all of the hemp, and leaving but little for commerce; this state of things continued for many years.

A few years ago, Mr. D. Myerly recommended the water rotting of hemp to farmers. Previously, it was nearly all prepared for market by dew rotting. From Mr. M's zeal and intelligence on the subject of water rotting hemp, may be dated its commencement in the west. The manufacture of cotton bagging requiring but little skill, and only a small outlay of machinery, it rapidly increased after the war. In 1844 there were five hundred and ten hand looms at work, besides several worked by steam power; producing a quantity greatly above the requirements to cover all the cotton produced in the United States; the over production depressed the price below its actual cost. To sustain themselves, the manufacturers reduced the price of hemp correspondingly. Bagging has been sold at Louisville at less than eight cents per yard; hemp for less than fifty dollars per ton.

This was the state of things just before the season for sowing hemp seed. In 1846, many farmers declined sowing. Hemp seed was abundant at twenty-five cents per bushel; the customary price being one dollar. In the course of the last three or four years, there had been sent from the west some few lots of dew rotted hemp; it seemed to be in greater favor with the eastern ship chandlers than formerly, comparatively with the common sorts of foreign hemp; so much so, that it was sold for one hundred and seventy-five dollars per ton. This very sudden advance caused much of the western hemp to go forward; the bagging manufacturers were at first unwilling to give as much as the dealers bid for shipping.

Shortly after this, however, a stir was made in the value of bagging, and it went up to thirteen cents. The manufacturers were now willing to pay the highest price, for it paid for exporting, but it was not to be had, and several of the Kentucky factories had to get their supplies from Missouri. These things occurred just before the past season for sowing.

Farmers are very willing to grow hemp, with a fair prospect of obtaining one hundred dollars per ton. There would have been a large crop put in last spring, if a supply of seed could have been procured; but from the very low price of hemp, very little seed was saved in 1846. Seed was not to be obtained at even two dollars and a half per bushel; consequently, there will be a very short crop in 1847. So there are two successive short crops. It is true a portion of last year's crop was *stacked over*, that will come into market with the present crop, but it is thought that all will be required by the bagging manufactories at one hundred dollars per ton, if the price of bagging does not fall below twelve cents per running yard at Louisville; that price, it is said, will keep out the foreign article.

Water rotting hemp is a new business with the western farmers; many errors and mistakes were committed in the beginning; experience points them out, and improvements are made and making; a better article is produced, the quantity increased and increasing, so as to give a full supply for the Navy of the United States, as the service may require, and for commerce.

Appended is a report of a test made by the superintendent of the U. S. rope walk, at Charlestown, Mass., where all the cordage for the U. S. Navy is made, showing the great strength of American water

rotted hemp, (4,200 lbs. being the required proof) and the very little injury it sustains by tar. The hemp from which this test was made, was water rotted by different farmers in Kentucky, broke and cleaned on the common hand brake. In this condition it was purchased by the U. S. hemp agent for Kentucky, in small lots. It was then hackled by hand, taking out about 30 per cent of tow and waste, baled and forwarded.

LEWIS SANDERS.

ROCKY MOUNTAIN FLAX.

By Alexander Walsh, Lansingburgh, N. Y.

We know of no plant which seems to better deserve an effort for its introduction into the class of cultivated vegetation, than the one above named. The common flax plant is an annual; is exposed to the depredations of many insects; to get the full amount of the crop it is necessary it should be pulled; and yet with all these drawbacks, it is a valuable crop, and indispensable for many purposes. If a plant possessing the same valuable qualities as the common flax, yet which would be perennial, and could be cradled or mown at maturity, thus giving an annual succession of crops from the same root, could be discovered and brought into use among us, and particularly in the fertile valleys and prairies of the Western States, the advantages would certainly be very great. Such a plant is the flax of the Rocky Mountains; and the individual or the society that shall introduce it into cultivation, should it answer present indications, will be considered as benefiting the agriculture of the country essentially. Of the various notices which we have seen of this plant, we select the following, as more particularly describing its appearance, and the extent of its growth in those regions:

Mr. Parker, in his excellent narrative of his journey across the Rocky Mountains, from the Mississippi to the Pacific, says: "Flax is a spontaneous production of this country. In everything except that it is perennial, it resembles the flax that is cultivated in the United States; the stalks, the boll, the seed, the blue flower, closed in the day-time and open in the evening and morning. The Indians use it in making fishing-nets. Fields of this flax might be managed by the husbandman in the same manner as meadows for hay. It would need to be mowed like grass, for the roots are too large, and run too deep in the earth, to be pulled as ours is; and an advantage that this would have, is, that there would be a saving of plowing and sowing." This was on a branch of Lewis, or Snake River, of the Columbia.

In a late journal of a passage across these mountains, by Mr. Oakley, of Illinois, under date of the 21st of July, 1836, occurs the following:

"Encamped to-night in a beautiful valley, called Bayou Sclare, 28 miles from the head of the south fork of the Platte. It is a level prairie, thirty miles long and three wide, and was covered with a thick growth of flax, which every year springs up spontaneously."

Whether the Rocky Mountain flax will prove to be as near the common flax as is supposed by Mr. Parker, may be doubted; but that it is unlike and far superior to the two or three kinds of native wild flax that have before been discovered in the United States, would also seem to be clear. A tract of 90 square miles of flax, such as Mr. Oakley described, would be a sight in any country, and would rival the grass-covered prairies of Illinois.

Flax of the kind mentioned above, can be seen in A. Walsh's garden.

ON SPAYING OF COWS.

Translated by HUGH H. BOWEN, from the French, for the Essex County Institute.

Trenton, February 2, 1848.

J. W. HAYS:

Dear Sir—Amongst the books presented to the State of New-Jersey by M. Vattemare, is a small pamphlet by a French veterinary surgeon, on the "castration," or, as it is commonly called in this country, the "spaying" of cows, which I found interesting, and I thought perhaps it would interest you, as well as some of the members of the Essex County Institute: I therefore translate a portion of the pamphlet, which you will find below. My knowledge of the French language is limited, and I have not a dictionary to assist me, and I may not be correct in my rendering.

The effect of the castration upon the cow, seems to be that it produces a more abundant secretion of milk, which acquires at the same time a greater richness, and results in the following advantages to the proprietor, viz:

1st. Increase of one-third in quantity of milk:
2d. Certainty of having more constantly the same quantity:
3d. The cow is not exposed to the accidents which often occur when she is in season, when the cows leap upon one another, and when they may be mounted by too heavy bulls:
4th. As they will not generate, all the accidents of gestation and calving are of course avoided:
5th. Greater disposition to fatten, when their milk fails, or the owner wishes to part with them.

This is the experience of one man, and another writes thus:

Of twenty-seven cows, aged from 6 to 15 years, which we have castrated, we have obtained the following results:

1st. Increase of milk in cows of 6 or 8 years:
2d. Constant supply in those above that age:

3d. The milk is richer than in the ordinary cow, and consequently yields more butter; the butter is always of a yellow color, and has a taste and flavor superior to that of a cow not castrated.

There are results of many other experiments given; they all unite in saying that the cow should not be operated upon, until her lactative powers are fully developed, say at the age of 6 years, and about 40 days after calving, when she will continue as long as the owner chooses to keep her, the same flow of milk, her feed and other things being equal. Instances are mentioned of cows having yielded the same quantity for 6 or 7 years.

Particular directions are given for performing the operation, which some better linguist, than I must translate, as they are full of technical terms.

To persons who keep cows for milk only, and to whom the time they are dry and suckling their calves, is a loss of seldom less than three months, an operation of this kind upon their animals would increase their value greatly.

As the subject was entirely new to me, I have troubled you with it. If you think it worth while to mention it before the Institute, perhaps some of the members may say something about it. The *theory*, which is obvious, is to me very plausible.

With great respect, I am, &c.,
HUGH H. BOWNE.

DESCRIPTION OF THE PRATTSVILLE TANNERY.

PRATTSVILLE, GREENE Co., N. Y.
November 27, 1847.

T. B. WAKEMAN, ESQ.,

Sec'y of the American Institute, New York:

Dear Sir—Having been honored by the American Institute with a medal for the best sample of hemlock-tanned sole leather, in compliance with your request, I have drawn up a brief but comprehensive account of the processes and extent of the manufactures carried on at my establishment in Prattsville; together with several tabular statements, designed to illustrate its importance as an industrial pursuit.

As I have worked and talked about the business for many years, and love to do so still, I know not how a Mechanic can answer, except by stating *how he did*, and *what he did.* I am aware that, through you, I am addressing the State of New York, whose chief commercial city imports a greater number of hides, and carries on a more extensive trade in leather, than any other city in the world. In this cold clime, every one must realize that next to food and raiment, leather is the *sole* for man. The improvements which I have made from time to time in this branch of business have been the result of experience; and dmonstrate satisfactorily to my own mind, that however important are the discoveries of science, they would be of little value, without that practice, which must ever prove the ultimate test of utility and the sure talisman of success.

Throughout the whole world American enterprise has become a proverb. Go where you will, from the ice-bound North to the regions of the torrid zone, in any path where civilized man has ever trod, upon the land or the sea—and you will not fail to encounter evidences of the peculiar genius of our people. You will find their

adventurous enterprise pushing itself into every nook and corner of the globe, where the materials and opportunities of commerce may be found, or, industry may be sure of a reward. Nor is this spirit impelled by the pressure of any general poverty or want of employment at home, which bears so heavily upon some of the European nations; but it is nourished by a natural love of independence, harmonizing with the theory of our own institutions—by a sense of self-reliance and the hope of fortune, which more or less actuates every individual. It is a spirit of progress, the spirit of the age, in which our country seems destined by Providence to take the lead.

But it is at home that the workings of American enterprise are to be seen on the grandest scale. Here, untrammelled by ancient customs, uncurbed by despotic institutions or royal monopolies, the American artizan finds a fair field for the exercise of his powers. His talents and energies are ever in a state of productive activity.

He toils, he invents, he wills. Cities arise in the wilderness; the habitations of man take the places of the huts of the savage; and the wheat fields move their yellow ears where but a few months before, stood the beautiful ever green hemlock of the forest. It need not be denied that the American, in all this, is mainly actuated by the selfish principle, the desire of acquisition, which is the very life of commerce and enterprise; but we do maintain, that the pursuit of money here is dignified, as it is nowhere else, by a sense of the vast ultimate effects of industrial causes upon the destiny of the conutry. The American feels that he is working not for himself alone, but in furtherance of the glorious experiment of building up a free people, whose protecting shield may yet cover the whole continent. His natural pride partakes of this peculiar sentiment of expansiveness, the grand feature of the country and climate; and he glories not only in his county as it is, but he looks forward to a future which he may almost hope to see realized, when the valley of the Hudson alone shall contain its millions of people, and when the cities and towns of the Pacific, by way of the great pass of the Rocky Mountains, the Oregon Railroad, and the Hudson, shall seek a market for their treasures in the emporium of North America.

It would be a curious subject of speculation to inquire into the causes that have conspired to mark the American people with such an extraordinary degree of enterprise; but such an inquiry would lead me altogether too far from the immediate object of the information which you desire. I shall therefore proceed, without further

digression, to give you a succinct, historical, and statistical account of my tannery, which I may, I hope, without incurring the charge of egotism or vanity, be allowed to say has been conducted with sufficient energy and skill to realize for me a competency, while it has been the means of spreading comfort and plenty to all directly or indirectly connected with its operations. And having closed the operations of the tannery, I may be allowed here to remark that the improvement in the business of a community, and aiding a society where such an establishment exists, always paying promptly, and liberally rewarding the diligent laborer, can only be appreciated by the few who understand its advantages. And I may in justice to myself express the proud satisfaction of having conducted this vast business without litigation—truly accomplishing what I said to my neighbors in the outset—that "I came to live *with* them, not *on* them."

A little more than twenty years ago, the district of country in which it stands was a perfect wilderness. Although just back of the well-known Catskill range, and not more than thirty-six miles from the banks of the Hudson, the great thoroughfare of our interior trade, the depths of its hemlock forests, the solitude of its mountain glens, and the flashing of its tumbling brooks, had been explored only by the foot of the hunter, and were as little known to the public as the slopes and valleys of the Rocky Mountains.

In 1824 I visited this district, and my judgment at once decided me to select it as the most advantageous location for the prosecution of my enterprise. It has ever been my motto, that to *will* and to *do* are one and the same thing. I accordingly went to work, and in less than ninety days a tannery was erected, and ready to commence business.

My tannery is an immense wooden building, 530 feet in length, 43 feet in breadth, and two stories and a half high. Within this area are contained 300 vats, tanning over 60,000 sides a year, with conductors to draw the liquor to the pump, affording about 46,000 cubic feet of room for tanning purposes. A large wing, forty feet by eighty, extending over the stream, contains twelve leaches, six of them furnished with copper heaters, containing about 12,000 feet, and also the bark loft, through which, in the course of the year, passes more than six thousand cords of bark. The mills through which it is ground are capable of grinding over a cord of bark per hour; and it has connected with it a pump of sufficient capacity to deliver

1,000 feet of "ooze," or water charged with tanning, in thirty minutes. The beam-house contains thirty vats, equivalent to 7,640 cubic feet. It has connected with it three hide-mills for softening the dry Spanish hides, and two rolling machines, capable of rolling 500 sides of leather per day. Outside of the building, but connected with the beam-house by an underground communication, are eight stone sweat pits, with pointed arches and flues. The pits are of the most approved size, being in area 10 feet by 14, and in depth 8 feet, with a spring of water at one corner.

Since I first commenced business, the gain of weight in converting hides into leather, has been increased nearly 50 per cent. That is, that from a quarter to a third more leather can now be obtained from a given quantity of hides, than at the time when I learned my trade at my father's tannery, conducted in the old fashioned way, some 40 years ago.

The great improvement in weight seems to have been gained by the judicious use of strong liquors, or "ooze," obtained from finely ground bark, and by skilful tanning.

The loss and wastage upon hides, from hair, flesh, etc., may be estimnted at from 12 to 15 per cent. In order to produce heavy weights, the hides should not be reduced too low in the beam house, and should be tanned quickly with good strong liquors, particularly in the latter stage of the operation. To green hides, particularly, nothing can be more injurious than to suffer them to remain too long in weak "ooze." They become too much reduced, grow soft, flat and flabby, lose a portion of their gelatine, and refuse to "plump up."

On the other hand, however, the effects of an early application of "ooze," that is too strong and too warm, to green hides, is very injurious. It contracts the surface fibres of the skin, tanning at once the external layers so "dead," as it is termed, as to shut up the pores and prevent the tanning from penetrating the interior. This renders the leather harsh and brittle. It will, from this, be seen, that in the question of the proper strength of liquor alone, there is room for the exercise of the greatest judgment and the most extensive experience. In the impossibility of adopting fixed rules to the innumerable variety of cases, nothing can be depended upon but the judgment of the practical tanner.

In softening hides, and preparing them for the process of tanning, a great deal also depends upon the judgment of the person superin-

tending the operation, inasmuch as the diversities in the qualities and characteristics of hides render it impossible to subject them to anything more than a general mode of treatment.

In "sweating," the character of the hides, and the temperature, are essential, but ever-varying considerations. As a general rule, however, the milder the process of preparing the hides for the bark, the better. Unnecessarily severe or prolonged treatment is inevitably attended with a loss of gelatine, and a consequent loss of weight and strength in the leather. Too high a temperature is particularly to be avoided. In almost every lot of hides, particularly Oronocos, however, there are generally some that prove very intractable—resisting all the ordinary modes of softening. For such, a solution of ashes, potash, or even common salt, will be found to be beneficial; and peculiarly so in hot weather. As I have said, no precise rule can be given as to the length of time required for the preliminary process of soaking and "sweating," so much depending upon the qualities of the hides, and the temperature at which these operations are conducted.

The following table may, however, be found useful in conveying an approximation to a definite idea of the practice of my tannery:

SOAKING.

Temperature,	40°	50°	60°	70°
	Days.	Days.	Days.	Days.
Buenos Ayres hides,	10 to 12	8 to 12	6 to 8	3 to 6
Carthagena and Laguira,	8 to 12	7 to 9	5 to 7	2 to 5

SWEATING.

Temperature,	40°	50°	60°	70°
	Days.	Days.	Days.	Days.
Buenos Ayres hides,	15 to 20	12 to 16	8 to 12	2 to 3
Carthagena and Laguira,	15 to 20	10 to 15	6 to 8	2 to 3

I would here remark that I changed the process from liming to sweating, for the sole leather, in 1836—the only change in tanning I have made for twenty years; and for heavy sole leather, it has been proved to be quite as good as liming, if not better, and somewhat cheaper; besides yielding a greater gain of weight, and when tanned, making leather more impervious to water. Liming and "bating," however, for upper and light leather, is preferable; and, if the same

improvements had been adopted with the lime process, of strong li quor and quick tanning, it is not yet certain that the same results would not have been attained.

Salted hides do not require more than two-thirds the time to soak; but generally rather longer to sweat. After the hides are prepared for tanning, the next process is, what is commonly called "handling," which should be performed two or three times a day in weak "ooze," until the grain is colored. New liquors, or a mixture of new and old, are preferable for Spanish or dry hides—old liquor for slaughter. They are then, after a fortnight, laid away in bark, and changed once in two to four weeks, until tanned. Much care and judgment is requisite in proportioning the continually increasing strength of the liquors to the requirements of the leather in the different stages of this process.

The liquors should also be kept as cool as possible, within certain limits, but ought never to exceed a temperature of eighty degrees; in fact, a much lower temperature is the maximum point, if the liquor is very strong; too high a heat, with a liquor too strongly charged with the tanning principle, being invariably injurious to the life and color of the leather. From this it would seem that time is an essential element in the process of tanning, and that we cannot make up for the want of it by increasing the strength of the liquor, or raising the temperature at which the process is conducted, any more than we can fatten an ox or horse by giving him more than he can eat.

It may be questioned (if anything may be doubted in the present improving age,) whether any patented scheme for the more rapid conversion of hides into leather, will be found, on the whole, to have any practical utility.

I have mentioned the injurious effects resulting from too strong a solution of the active principle of the bark; on the other hand, the use of too weak solutions is to be avoided. Hides that are treated with liquor below the proper strength, become much relaxed in their texture, and lose a portion of their gelatime The leather necessarily loses in weight and compactness, and is much more porous and pervious to water. The warmer these weak solutions are applied, the greater is their loss of gelatine. To ascertain whether a portion of weak liquor contains any gelatine in solution, it is only necessary to strain a little of it into a glass, and then add a small quantity of a

stronger liquor. The excess of tanning in the strong, seizing upon the dissolved gelatine in the weak liquor, will combine with it, and be precipitated in flakes, of a dark curdled appearance, to the bottom. At the Prattsville tannery, the greatest strength of liquor used for handling, as indicated by Pike's barkometer, is 16°; of that employed in laying away, the greatest strength varies from 30° to 45°.

After the leather has been thoroughly tanned and rinsed, or scrubbed by a brush-machine or broom, it will tend very much to improve its color and pliability to stack it up in piles, and allow it to sweat until it becomes a little slippery from a kind of mucus that collects upon its surface. A little oil added at this stage of the process, or just before rolling, is found to be very useful.

Great caution is necessary in the admission of air in drying, when first hung up to dry. No more air than is sufficient to keep the sides from moulding should be allowed. Too much air, or, in other words, if dried too rapidly in a current of air, will injure the color, giving a darker hue, and rendering the leather harsh and brittle. To insure that the thick parts or butts, shall roll smooth and even with the rest of the piece, it is necessary that the leather should be partially dried before wetting down for rolling, and that when wet down, it should lay long enough for every side to become equally damp throughout.

The following table, condensed from the tanning records of 200,000 hides, exhibits the time required to tan the various description of hides at my establishment, during a period of four years. It will be seen that the same description of hides require different times in different years. This is owing mainly to a difference in the temperature and weather of the several seasons, and the quantity of sides and strength of liquor in the vats, and partly to the different conditions and qualities of different lots of the same description of hides:

	No. of sides.	Time of tanning.	
		Months.	*Days.*
1841—San Juan,	7,500	4	20
Orinoco,	3,500	5	15
"	1,900	6	--
"	9,000	6	10
Laguira,	22,000	7	15
Orinoco,	6,500	5	15

		No. of sides.	Time of tanning. Months.	Days.
1841	Matamoras,	1,100	5	--
	"	2,300	5	20
	San Juan,	6,500	4	15
	Montevideo,	5,800	4	--
1842	Honduras,	3,600	6	20
	Buenos Ayres,	10,500	6	10
	Chagres,	1,700	6	--
1843	Orinoco,	1,100	5	--
	Montevideo,	2,700	5	--
	Rio Grande,	5,800	4	20
1844	Buenos Ayres,	6,500	6	20
	Orinoco,	5,400	7	--
	California,	1,200	6	20
	Buenos Ayres,	900	7	10
	"	6,500	5	10
	Orinoco,	1,500	4	20
	Rio Grande,	2,100	5	--
	"	4,000	5	10
	Orinoco,	2,800	6	10
	Laguira,	5,100	7	--
	Rio Grande,	1,100	7	--
	Buffalo,	2,000	5	--
	Buenos Ayres,	2,000	6	--
	Rio Grande,	8,500	6	10

From the above table, it will be seen the average time of tanning in 1842, was five months and seventeen days; of 1843, five months and twenty-two days; of 1844, six months; and of 1845, six months and eleven days. Average of the whole time, five months and twenty-seven days. The average weight of the leather was over eighteen and one-half pounds per side. This, according to the best authorities we have at hand, is considerably below the time employed in England. There, it is no uncommon thing for eight and ten months to be employed in tanning a stock of leather, and some of the heaviest leather, it is said, takes even fourteen and eighteen months. Such deliberation undoubtedly insures a fine quality of leather, but it may be questioned whether there is not a great loss in the increase of weight; a loss of interest on capital, and in consequence an unnecessary enhancement of price, which does not suit the American market.

In order to show the amount of business done, I have carefully collected and tabularized from my books, the following statistics of the "Prattsville Tannery," for twenty years, in tanning about 1,000,000 sides of sole leather:

Statistics of the Prattsville Tannery for twenty years; various materials used, and labor employed.

6,666 acres bark land=10 square miles=18 cords to the acre=120,000; at $3 per cord,		$360,000
No. of days' work peeling and piling do, days,		118,555
4 trees to the cord, trees,		475,200
120,000 loads or cords=264,000,000 lbs, cords,		132,000
444 acres of wood-land=32,000 loads, or cords, worth		$32,000
135,380 bushels of oats, at 2s 6d per bushel,		41,967
1,200 tons of hay, at $8 per ton,		9,600
313,000 days' work in tannery=1,000 years' labor, at $14 per month,	$162,000	
Board, at $1.50 per week,	78,000	
		$240,000
500,000 hides, weighing 15,000,000 lbs.,		1,750,000
Cartage, 5,700 loads, of 2,600 lbs. each, (one pair horses,)		
1,000,000 sides sole leather at 18 lbs. per side, lbs.,		18,000,000
Hides and sole leather, together,		33,000,000
Cost of carting,		$52,800
3,000 lbs. per load of leather, one pair of horses,	$6,000	
2,600 lbs. per load of hides, one pair of horses,	5,700	
		11,700
Freight of hides and leather between New-York and Catskill,		$30,000
Equal to 18,000,000 lbs of leather, at 17 cents per lb.,		3,060,000
Lost and worn out about 100 horses, at $75 each,		7,500
Cost of wagons, at $250 per year,		5,000
Insurance on stock,		12,000
Yearly expenses,		300,000
Total expenses, about		6,000,000

And, in justice to my workmen, I ought to say, without the use of ardent spirits, or ever having a side of leather stolen.

A glance at this table will at once convince any one that the advantages of such an establishment are not confined to the amount of

value produced. The labor employed directly or indirectly may be set down at two hundred men daily. The ramified branches of business and trade that it fosters; the comfort, refinement and intelligence of which it becomes the centre, and its final influence upon the growth and populousness of the surrounding district, cannot, I think, be too highly estimated. The following table shows but one single item, the amount of labor employed within the walls, or that which is directly and immediately employed in the process of tanning; but, from a comparative inspection of it, and the table above, some idea may be formed of the amount of labor indirectly engaged.

Average number of men employed at the Prattsville tannery throughout the year, with their respective wages per month.

	No. of hands.	Pay per month.		
BEAM HOUSE.				
Foreman,	1	$32 00		$32 00
Choresmen,	2	12 00	& $6 board,	36 00
Beamsmen,	12	14 00	"	180 00
IN THE YARD.				
Foreman,	1	50 00		50 00
Handling and laying away,	8	12 00	"	144 00
Brushing leather,	6	12 00	"	72 00
Nightman to leaches,	1	14 00	"	20 00
Grinding bark by day,	1	12 00	"	18 00
" night,	1	14 00	"	20 00
Wheeling bark,	4	12 00	"	72 00
Filling and pitching leaches,	3	24 00	"	60 00
DRYING LOFT.				
Foreman,	1	20 00	"	26 00
Spunger,	1	12 00	"	18 00
Rollers,	2	15 00	"	42 00
Hanging up and taking down leather,	2	12 00	"	36 00
MISCELLANEOUS.				
Foreman out doors,	1	41 00	"	47 00
Carpenter,	1	39 00	"	45 00
Teamsters,	12	11 00	"	218 00
Total,	58			$1,120 00

500 cords of bark, at $3 per cord,	1,500 00
Cartage, repairs, &c., &c.,	500 00
Grand total per month,	$3,120 00

In the following table I have given a condensed view of the operations at my tannery during five years:

	No. of hides rec'd at the tannery.	Weight of hides.	Cartage in New-York.	Commissions.	Total value of hides.
1841..	30,984	724,168	$291 47	$5,701 47	$108,758 06
1842..	27,194	601,595	275 89	3,938 30	82,705 01
1843..	28,433	630,192	213 24	4,425 64	78,198 03
1844..	36,839	812,403	276 28	5,718 36	100,972 82
1845..	20,556	460,798	154 17	2,920 25	51,176 60
Total,.	144,006	3,229,155	$1,211 05	$22,704 02	$421,810 52

LEATHER RETURNED TO NEW-YORK.

	Sides.	Pounds.	Av. weight per side.	Av. nett price.	Commissions.	Nett proceeds.
1841,	61,729	1,211,856½	19,63	14 44	$7,352 24	$175,018 54
1842,	54,323	995,057¾	18,32	13 93	5,827 08	138,581 05
1843,	56,742	1,061,523¾	18,71	13 60	6,053 42	144,331 83
1844,	73,590	1,310,779	17,81	12 55	6,895 25	164,517 53
1845,	40,891	737,789	18,03	11 06	3,430 57	81,595 26
Total,	287,275	5,316,789	18,51	$13 24	$29,548 66	$704,044 21

N

I have been engaged over forty years in hemlock tanning; and of the many books which treat of the process of tanning, none have been found which give any information of the mode of hemlock tanning. The bark has scarcely ever been analyzed for the use of the tanner; and the knowledge which I have acquired, has been the result of long continued practice and experience. This teaches one that the hemlock is much stronger than the oak.

The tanning of leather, more than almost any other manufacture, is a chemical process, the success of which depends almost wholly upon the skill and judgment with which its complicated manipulations are conducted. To attain the requisite skill in the laboratory of the chemist, is evidently impossible; it can only be acquired in the tannery itself, by long and careful attention and observation; and, perhaps, there is no description of manufacture, where more depends upon practical knowledge, and so little upon mere theory, as in the tanning of leather. The tanning of leather consists in effecting a combination between the gelatine, which is the main constituent of raw hides, and tanning a peculiar substance found in the bark of several species of trees—the oak and hemlock, chiefly. The processes employed are so various, and quality and condition of the hides are so numerous and so different, that hardly any branch of business requires for its successful conduct a greater degree of judgment and experience; and in few arts have there been greater improvements.

The following table is annexed, presenting some facts which may be of general interest.

	1.	2.	3.	4.	5.	6.	7.	8.	9.
1836,	2,151	48,130	22¼	6,594	7¾	397	3,573	50,808	901,296
1837,	2,305	53,172	23	5,686	9	500	4,500	50,947	815,152
1838,	3,118	59,283	19	4,991	10	496	4,464	50,750	812,000
1839,	2,984	59,675	20	6,276	9	558	5,022	56,096	945,321
1840,	3,089	50,514	16¼	6,207	9¼	590	5,310	57,601	1,009,609
	12,647	270,774	20	29,752	9	2,541	22,869	266,202	4,483,378

NOTE.—Column 1 shows the number of days' work in the beam house; 2, number of sides worked in; 3, average per day; 4, number of days' work grinding bark and tanning; 5, average per man per day; 6, number of leaches; 7, cords of bark used, at 9 cords per leach; 8, leather tanned out, (sides;) 9, do do (pounds.)

The labor in the loft and peeling bark during the above five years, was 8,820 days. One man will work through the beam-house in one year, 6,260 sides. One man will tan and finish 2,228 sides. One cord of bark tans 196 lbs.

The question has been frequently asked me, how long does it take to tan sole leather? I answer, from four to six months, according to the strength of the liquor and number of sides in the vats; and the quicker tanned the better. I would here remark that several considerations must be noticed in order to meet the questions understandingly, and—

1st. I should say that the weight of the hides, every one knows, if heavy, requires more time than if comparatively light.

2d. If the hides are fresh they are capable of being properly softened, and if so, the process of tanning may be completed much sooner than in the case of old and hard hides, that cannot be softened with the same facility.

3d. If the hides have sufficient room in the vats, so as not to lay crowded, they will tan much faster.

4th. As the tanning advances, the liquor should be renewed seasonably, and its strength increased in a ratio proportionate to each stage of tanning.

5th. The question, is the leather to be tanned so as to barely pass in market, or to be well prepared so as to make firm and solid leather? involves a consideration of much importance.

It would be easy to extend this communication, but I will not tire the reader's patience with unnecessary details. Desirous of contributing my mite to the industrial occupations of life, I have thrown together, in my plain matter-of-fact manner, only such facts and figures as it appeared to me would be of service to my brother mechanics; and if they prove so, I shall feel amply rewarded for the trifling contribution thus made to the general stock of knowledge—as the design of life is to be USEFUL.

With great respect,

I have the honor to be

Yours, truly,

Z. PRATT.

The following tables I have added for the satisfaction of the curious in such matters:—

SOLE LEATHER INSPECTED IN NEW-YORK.

Showing the total number of sides of sole leather inspected in the city of New-York during the years 1827 *to* 1847, *say* 20 *years; also, showing the nett value or price per pound of same, excluding all charges.*

Years.	No. sides.	Av. price.
1827,	265,533	17½ cents.
1828,	284,978	18½
1829,	264,878	18½
1830,	326,298	18½
1831,	440,000	19½
1832,	667,000	17¼
1833,	882,609	15¾
1834,	828,175	13¾
1835,	784,165	14¾
1836,	925,014	17¼
1837,	890,962	16
1838,	749,556	17
1839,	772,255	18 1-6
1840,	638,112	16¼
1841,	687,101	16¾
1842,	886,868	14 1-10
1843,	867,210	13⅜
1844,	1,048,770	13½
1845,	1,037,500	12¼
1846,	1,074,256	11¼

HIDES—NEW-YORK.

Showing the number of hides imported into, exported from, and consumed by the port of New-York, during the years 1827 *to* 1847, *say* 20 *years, closing each year on* 31*st December. This table includes horse hides, taken from shipping and commercial lists and customs.*

Years.	Imports.	Exports.	Consumed.
1827,	259,975	41,545	218,430
1828,	268,744	48,369	220,375
1829,	308,987	52,023	256,964
1830,	475,640	26,305	449,335
1831,	772,299	8,017	764,282
1832,	975,094	169,493	662,705

Years.	Imports.	Exports.	Consumed.
1833,	892,198	58,282	833,916
1834,	700,052	169,856	530,196
1835,	868,381	21,903	836,378
1836,	942,890	109,273	833,617
1837,	623,925	99,356	524,569
1838,	543,300	25,695	517,605
1839,	561,105	24,186	536,919
1840,	520,251	31,325	488,926
1841,	633,269	4,245	629,024
1842,	635,631	21,286	604,345
1843,	653,431	53,633	599,788
1844,	854,790	45,615	809,175
1845,	777,640	53,633	724,007
1846,	636,583	55,924	580,659
1847,	990,454	15,236	975,069

HIDES—LIVERPOOL.

Years.	Imports.	Exports.
1827,	186,127	29,001
1828,	290,512	30,880
1829,	542,411	128,449
1830,	514,260	170,604
1831,	564,869	138,220
1832,	351,807	111,450
1833,	692,419	62,000
1834,	626,189	213,855
1835,	682,141	337,444
1836,	479,107	198,277
1837,	573,384	166,930
1838,	503,806	102,000
1839,	816,085	190,000
1840,	643,785	170,000
1841,	924,060	200,000
1842,	666,974	259,265
1843,	846,526	176,556
1844,	800,871	-------
1845,	810,704	-------

From the census of New-York, in 1845, we gather the following:

The number of tanneries in the State,---------- 1,414
Value of raw materials used and manfac'd in the State, $4,052,949 00
Value of manufactured articles, ---------- 6,585,006 00

This is for leather alone, not including boots, shoes, harness, &c.

DUTCHER'S PRAIRIE PLOUGH.

NEW-YORK, *March*, 20, 1848.

T. B. WAKEMAN, ESQ.,

Corres. Sec., of American Institute.

Dear Sir—In my former communication to you, I did not mention my prairie plow, and my time being so much occupied in my daily avocations, have not been able to do anything like justice to the subject, yet I will make a few remarks to show how entirely the plow has occupied my time and attention.

As early as the year 1834, I was earnestly solicited by quite a number of persons who had been west and seen the prairies, to make a plow adapted to the breaking up of the peculiar stiff matted sward of the prairie; at that time I had not seen a prairie, and could not form any idea of a definite character of what was required; but with such limited information as I could obtain from the descriptions given me by those who had seen the plows and work to be performed, in 1836 I made a plow adapted to this purpose, differing entirely from anything that I had seen or heard of; I went to Alton, Ill., and there I found people ready to aid me in trying my plow; a company of gentlemen of this place accompanied me five miles to a prairie to test it, the following is the certificate of the committee who witnessed its performance.

CERTIFICATE.

"We had the pleasure of witnessing a trial of Mr. Josiah Dutcher's newly invented prairie plow, on the farm of Mr. George Foster near Monticello, and take great pleasure in stating to the public that the performance far exceeded that of any plow we have ever seen in use.

The inventor in our judgment, has fortunately united in his model *strength, durability* and *simplicity of structure*, and at the same time, the plow is lighter and requires less strength to control it, than

the prairie plow now in use. This plow is constructed very much on the principle of the 'patent plow' generally in use, the mould side and land side being of cast iron, with a share of cast steel so constructed and set, as to insure complete execution in any soil; and is of great strength and durability. The ground when the experiment was made, was by no means favorable, much of it being *tough oak barrens*—and in our opinion the common plow could not have been used with any degree of success; the common prairie plow now generally used in Illinois, as all farmers know, requires the power of 4, 5 and 6 yoke of oxen, in prairies entirely free from roots; and we are satisfied that the plow of Mr. Dutcher would not in any soil require more than 3 yoke. On Mr. Foster's farm, but two small yoke were used, and were to all appearances sufficient for the labor; we were truly astonished to witness the facility and neatness with which Mr. Foster was enabled to break his prairies with this plow with but two yoke of light cattle. The plow cuts a furrow of 18 inches, and the size of the roots (principally oak and hickory,) which the share cut without stopping the progress of the team was truly astonishing; many of the roots cut in this way were 2 and 3 inches in diameter. So well are we satisfied, that the invention of Mr. Dutcher will be an available acquisition to the farmer, that we have no hesitation in recommending it as decidedly the best prairie plow ever introduced in Illinois; would point out many advantages which this plow possesses; but will content ourselves in saying that the plow of Mr. Dutcher has greater strength—is more durable—may be kept in repair at less expense—executes better—requires less power—and is in every respect superior to any plow we have ever seen in use; we cheerfully recommend Mr. Dutcher's plow to our farmers, and wish the inventor every success as a reward for his enterprise and genius.

Chas. W. Hunter,	Eli Foster.
S. Ryder,	John James,
W. S. Gilman,	J. M. Krum,
Geo. Smith,	Geo. Foster,

Alton, Ill., June 10, 1839."

This plow is different from any that I have knowledge of, having a different work to accomplish; the plows that were in use when mine was introduced, usually required five and sometimes six yoke of oxen to plow a furrow 18 inches wide by 3 inches deep—the furrow said to be the best—this proportion furrow will fall side by side,

similar to the planks of a floor; (all plows will lay a furrow in this position if the furrow is in this proportion, that is 18 inches wide by 3 inches deep—with my plow I perform the work with 3 yoke of oxen, and they were sufficient.)

The main body of the plow is similar to my common plow, excepting considerably larger—the principal improvement is in the share and coulter; my mould board is made with a slot in the face of it to admit of space enough for a nut to turn, the bolts that fastens the share to the mould board, are countersunk in the share on the underside, and come up through the casting of the mould board with nuts in their slots in the face of the mould board; a cast cap is put over to cover up the nuts, and make the mould board even on the face. The share is made of a plate of cast steel 6 inches wide, and about $\frac{3}{16}$ thick—this plate of steel is turned up at an angle to suit the angle of the plow, not far from a mitre so that it comes to a sharp point both horizontally and perpendicularly, these two edges are both made thin and sharp, and kept as sharp as a file can make them, the castings of the plow is so made as to accommodate the share which is attached to the underside of the mould board—this share is made 6 inches wide with two tiers of holes in it, so that when it is worn off an inch and a half, it may be moved forward and worn again another inch and a half, the coulter forms the edge, and is put on the outside of the perpendicular part of the share, where a bolt goes through the casting and share, and connects the share to the plow; this coulter is laid with steel and made sharp, and is put on the side of the beam with a cast cap of iron bolted to the beam—this peculiar shaped share although quite simple, is very effective, cheap and strong; I have seen it cut off roots and small stumps 3 inches and a half in diameter. This plow is of immense value at the west, it saves one third or more in the draught, and costs nothing to keep it sharp, while with the other plow the plowman is obliged to take the share and go sometimes ten or more miles to a smith to get it sharpened, once or twice a week; the loss of time, the expense and the extra team that the old fashioned plow required, and which is dispensed with in mine, shows plainly its superiority.

I will here state what a well informed farmer of Illinois told me—said he, a man can well afford to give one dollar a day for the use of your plow, rather than to use the old fashioned one for nothing.

As I could not have my health at the west, being ill more than half the time I was there, I have realized but little benefit from my improvement, and on the other hand have spent three years in en-

deavoring to introduce it in the west, and one year's sickness when I returned. The west will be immensely benefited by this improvement—undoubtedly to the amount of one hundred thousand dollars, while I have been the loser in the operation of at least five thousand dollars, besides my health injured for life. When I take a retrospective view of what I have done for the American public in the improvement of the plow for the last thirty years, and see how the public at large have dealt with me, and the government in particular, whose province it was to protect me, instead of protection I have received the contrary; I have been denied my just rights, they have been legislated away from me, and given to others. I can reasonably reckon up more than ten thousand dollars, very safely that I have expended for it, in time and money, to make and introduce the *common* and *prairie* plow, I have never received one thousand dollars in return.

JOSIAH DUTCHER.

AMERICAN AND FOREIGN SALT.

By E. Meriam, of Brooklyn, L. I.

47 Orange-St., Brooklyn, *Feb.* 10, 1848

To the President and Board of Managers
of the American Institute:

Gentlemen—I have heretofore addressed you two communications upon American and Foreign Salt. The first of these, dated October 10, 1842, and the second, dated February 10, 1844. In the communication of October 10, 1842, I included a statement of the import of Foreign Salt into the ports of the United States for a period of ten years, ending Sept. 30, 1841, furnished me by the acting Secretary of the Treasury of the United States. The largest quantity of salt imported in any one year of the period named, was for the year ending Sept. 31, 1840, being 8,183,203 bushels of 56 lbs. to each, which paid to the government of the United States an import duty of seven cents, in mills, per bushel of 56 lbs.

I accompanied that statement with an extract from the United States census returns of 1840, showing that the manufacture of salt in the United States for 1839, was estimated at 6,179,174 bushels of 56, and 50 lb. each. The bushel in Virginia being 50 lb., and in New-York 56 lb. The quantity manufactured in New-York was stated at 2,867,844 bushels, and in Virginia at 1,745,618 bushels. Adding the quantity of salt imported to the quantity manufactured, and the two will be found to produce an aggregate of 14,303,377 bushels, equal to an average supply of more than three pecks of salt for every man, woman and child, in the United States, according to the census of population as returned, in 1840.

I have recently received from Washington the following statement:

House of Representatives, *Dec.* 15, 1847.

Dear Sir:—I inclose you the answer of the Register of the Treasury to the inquiries made by you in regard to the importations of salt. I am yours truly,

HENRY C. MURPHY.

E. Meriam, Esq.

TREASURY DEPARTMENT, *Dec.* 15, 1847.

Sir:—In compliance with the request of Mr. Meriam, communicated in your note of the 13th inst., I have the honor to transmit, herewith a statement of the quantity and value of salt imported into the United States from the 30th of September 1841, to the 30th June, 1847, which is the latest period to which full returns from the several ports of entry have been received at the Office of the Register of the Treasury, by whom this statement has been prepared. The letter from Mr. Meriam is also enclosed.

Very respectfully your obedient servant,

MC. C. YOUNG,

Acting Sec'y of the Treasury.

HON. HENRY C. MURPHY,

House of Representatives.

Statement of the quantity and value of Salt imported from the 1st of October 1841, to the 30th of June, 1847.

	Quantity. Bushel.	Value. Dollars.
In the year ending 30th Sept., 1842,----	6,178,743	841,572
From 30 Sept. 1842 to 30 June, 1843,--	5,454,577	710,489
In the year ending 30th June, 1844,----	8,243,139	911,512
" " " " 1845,----	8,543,527	898,663
" " " " 1846,----	6,423,317	768,682
" " " " 1847,----	7,235,508	803,592
	42,078,811	5,024,420

DANIEL GRAHAM, *Register.*

TREASURY DEPARTMENT,
Register's Office, Dec. 15, 1847.

The superintendent of the New-York State salines has addressed me a letter, of which the following is a copy:

SUPERINTENDENT'S OFFICE,
Syracuse, Dec. 24, 1847.

Dear Sir: The quantity of salt inspected the past year, to date, in the town of Salina, is 3,952,019 bushels. The amount for the current year will fall but little below four millions of bushels. Our salt has sold higher the past season than for some time previous. The profits have been consequently more than for a number of years before. Wood has been as high as $5 per cord for salt purposes: average for hard wood, $3.50.

Barrels have been sold as high as 50 cents, average 35 cents. Notwithstanding these high prices, the manufacturers have realized a handsome profit.

Will you have the kindness to send me, soon, a statement of the quantity of foreign salt imported into New-York the past year, its price, &c.

Respectfully yours, &c.,
E. MARKS, *Sup't*,
per D. C. LE ROY, *Dep. Sup't.*

E MERIAM, Esq.

I have a letter from the Hon. Thomas Spencer, dated Onondaga Salines, November 11, 1847, in which he says: "The quantity of salt manufactured at our salines this year, will not vary much from three and a half millions of bushels, which is about a quarter of a million less than was made last year. This deficiency has been chiefly caused by a scarcity and advanced price of wood for fuel, and a consequent advance in the price of salt, which has deprived the manufacturers of their ability to compete (as they have formerly done) with the foreign salt, in the markets upon the Hudson River and in your city, very little having been shipped in that direction the present season. The average price for wood the present year has been about $3.50 per cord; but it has been gradually advancing the latter part of the season, until it has reached $5, and there has been a corresponding rise in the price of salt. The present price is $1.50 for fine, and $2 per barrel for coarse solar salt. The barrels contain five bushels, of 56 lbs. each. Fine was offered at $1.12½ when wood was $3.50 per cord. The time has now arrived when mineral coal should be used: our forests cannot much longer

supply so great a demand. The quantity used daily during the business season is about 1000 cords. Blossburg coal can be delivered here for about four dollars per ton, which for manufacturing purposes, I think, is cheaper than wood at $3.50 per cord.

"The quantity of salt manufactured last year at the Kenhawa (Va.) Salines, was three millions of bushels, of *fifty* pounds each. It was, however, more than their market required. The manufacturers informed me that this year they should make but two and a half millions of bushels, which they thought would supply the demand. The price at the works when I was there (first of August,) was 20 cents per bushel, 50 lbs., including the barrel in which it is packed. They use bituminous coal for fuel, which is abundant and contiguous to the works. It costs delivered at the works, about two and a-half cents per bushel, and a bushel of coal consumed produces a bushel of salt. Their brine is not quite half as strong as ours, and it contains a much larger share of impurities; but they manage to cleanse it in the process of manufacture, so as to make an excelledt quality of salt. Their works are located on the banks of the Great Kenhawa River, 50 or 60 miles from the Ohio. The river is navigable for steamboats up to the salt works, and there is a brisk trade carried on with Cincinnati, which is their general salt market. Large quantities are, however, sent to other markets on the Ohio, Wabash, Cumberland and Tennessee rivers.

"There are 41 furnaces in operation, each of which has its own salt well.

"I noticed two furnaces where no fuel but gas is used, where the flues or chambers beneath the boilers were 100 feet long, 8 feet wide, and 5 feet deep, which were filled with an intense flame, and to one of them, a column of flame poured out of the chimney, 30 feet high.

Thomas Preston, Esq., writes me from the salt mines in the mountains of southwestern Virginia, under date of August 31, 1847, among other things, thus:

"I presume Mr. S. has given you an account of the improvements we have made in the construction of furnaces for evaporating brine. I think I am entitled to the credit of some of that merit—even a patent. By springing arches under the kettles, and suspending them entirely in the flue, two very great objects are effected: First, the

kettle is preserved; and, second, the heat is more generally diffused through the furnaces and around each kettle. By these means I could make between 70 and 80 bushels of 50 lbs. each, from one cord of wood, the water being of 90° of salometer. This is a good deal more than was ever done at Syracuse, or any where else that I have been. I propose visiting Kanhawa next month, and I hope to derive information which will repay me for the trip. I cannot expect to bring home as much as I did from the North, but I hope to learn something that may be of use."

Dr. McCall, in a letter to me dated Saltville, Va., June 1, 1847, says:

"Three gallons of our brine contain as much salt as four of the New-York brine, and we have no trace of muriate of lime or magnesia; nor when our brine is 96° per salometer, has it any impurity except about ¾ or 1 per cent. sulphate of lime, which is chiefly deposited in the blocking. Ours is the best pickling salt, the whitest and purest muriate of soda any where used. It can have no superior, if any equal, and without any process of clarification whatever. The rock salt in the vicinity is about 95 per cent. in purity, being mingled with blue clay and green slaty sand, which is separated on dissolution. If we could sell alum or solar salt in this country, there is no doubt that by solar heat it could be made as cheap as by fire heat or slow evaporation by steam."

Salt is now sold at Saltville at 25 cents for 50 lbs; formerly the price was one dollar for the same quantity.

I have thus far confined my extracts to American salt. I now come to treat of Foreign salt.

Solomon Townsend, Esq., in a letter to me, dated London, Oct. 3rd, 1845, says:

"I have not as yet been near any of the salt works, except those on the coast of France, which were much impeded by the heavy rains of the season, so that the price of the article has risen much. At Salines, where are the Springs, in the east of France, the water is carried in conduits, 15 miles, to a forest, where it is allowed to deposit its sediment, and is there evaporated. This is equal to the plan of the Oswego people, once proposed, of having the water of Syracuse thus carried to the woods of their neighborhood, instead of carrying the wood to the water.

Alexander Burton, Esq., Consul at Cadiz, in a letter to the Secretary of State, dated Sept. 1843, says:

"Salt can be sold only at wholesale by individuals, and solely for exportation to foreign countries. The average price of this year's export is $4\frac{3}{5}$ cents per bushel. The retail of salt throughout the Spanish dominions is a monopoly of the government, and it is at present farmed out. The fixed price of sale for this article of consumption of Spain differs according to the distance from the sea. In Andalusia it is $2.75 per 100 weight. Salt is sold for cash. American vessels coming to Cadiz in ballast to load this article, generally bring specie."

The United States Consulate at Marseilles, under date of March 3d, 1843, reports to the Secretary of State, as follows:

"Salt $2.40 to $3.20 per ton, of 2240 lbs. Salt is generally taken as ballast by masters of vessels. Retail price six cents per pound. Internal taxes $6 on 224 pounds. No export duty."

Salt at Liverpool costs fifteen shillings sterling per ton, of 2240 lbs.; bags to contain one ton, cost 12s. 6d.; filling and sewing 15s.; river frieght 3s.; mats for dunage, 3s. 8d.; this is a fraction short of 28 cents per bushel of 56 lbs. on board.

George Gibbs, Esq., Acting United States Consul at Turks Island, reports to the Secretary of State, under date of Aug. 31, 1843, as follows:

"Salt is the only produce of this Island. Wholesale price 8 cents per bushel. Export duty 1 cent per bushel to the United States."

W. H. Freeman, Esq., U. S. Consul at Curacoa, writes to the Secretary of State, under date of Nov. 1843, as follows:

"The salt of Curacoa and its dependencies is acknowledged on all hands to be superior to all other. It is heavier by about 20 per cent., and the same being obliged to pay duty by weight, and being sold by measure, enables other Salt Ponds in the West Indies to supply the United States with an inferior article, and thus exclude that made here; and while salt in all other parts of the West Indies is paid for in cash by vessels taking the same, (here it has generally been shipped on account of the planters, so termed,) and the returns

are made in the products of the United States, which besides giving a further employment to our marine, and a commission to our merchants, would be sure to lead to an increase of trade from year to year. There is now enough on hand to employ 10,000 tons of shipping to take the same away, and the inability of finding a market under our present *tariff*, has led to numerous applications here to me, to notify the same to the government, in hopes of a remedy. Salt 26 to 36 cents per bbl. A bbl. contains 4 Curacoa bushels, equal to 3½ United States bushels."

The increase in the manufacture of salt at the New-York Onondaga State Salines, has been 1,084,175 bushels of salt, more in 1846 than all the salt made in the State of New-York in 1839; and Mr. Spencer, in his letter, estimates the quantity of salt made of the Kenhawa salines in 1846, at 3,000,000 bushels, and this is 1,254,382 bushels more than was made in the State of Virginia in 1839.

The average annual import of salt for ten years from and including 1832, to and including 1841 to Sept. 30, was 6,290,171 bushels, of 56 lbs. each, and for five and three-fourths years, ending June 30, 1847, 7,317,652 bushels, of 56 lbs. each; being an average annual increase of 1,027,454 bushels.

In 1839, the State duty imposed upon the manufacture of salt at the Onondaga salines, was six cents per bushel, of 56 lbs.; it has since been reduced, and is now but *one cent* per bushel of 56 lbs.

The duty on the importation of salt from foreign ports and places is now 20 per cent *ad valorem*. In 1832, the prices of Turk's Island salt in the New-York city market, was from 50 to 53 cents per measured bushel; the import duty was then 10 cents for 56 lbs. salt. In 1847, the price of Turk's Island salt in the same market was from 25 to 36 cents the measured bushel.

The island of St. Martins produces salt of excellent quality; it is of greater specific gravity than any salt which comes to this market, weighing about 87 lbs. to the measured bushel. It is sold at the island at 9 cents per measured bushel. A letter from a salt planter there to a commercial house here, has been kindly furnished me, from which I extract as follows:

"The Salt Pond here has yielded this crop about 700,000 bushels. This island salt is not made from sea water, as is the case in other

salt islands, but from the salt springs and mines situated in the pond, and which pond is capable of realizing ten millions of bushels at one crop, having done so half a century ago. The pond promises again to be very productive, in consequence of the springs being reopened from some *convulsion of nature*, which were supposed to have been closed for many years, *by a similar cause.*"

I understand that provision packers object to St. Martin's salt on account of the large size of the crystals; this difficulty is easily remedied by screening the salt and using the larger crystals for repacking. Salt for packing provisions should be sufficiently coarse to keep the layers of meat apart, so that the brine can act upon the entire surface of the meat.

At the Fossil salt mines, or the mountains of southwestern Virginia, salt is now selling at 20 cents per bushel; formerly the same quantity at the same place sold for *one dollar.* In 1845, Dr. Mc Call, one of the proprietors of the Virginia salt mines, addressed to me a letter on the subject of making salt in that locality, in which he stated that the expense of making a bushel of salt was from 12½ to 15 cents. I was surprised at this great cost of manufacture, for I had been furnished with specimens of the salt rock, and with brine from the wells which connected with the salt mines, and knew that the brine was of great purity, and testing by the salometer 94 degrees, and was also aware that fuel was there both abundant and cheap. In reply I stated to him that salt at the Onondaga Salines was sold at from 6 to 8 cents per bushel of 56 lbs. (duty off,) that the brine was only 74° of strength, and impure, and wood for fuel double the cost of wood at Scottville.

These facts were a conclusive argument, and Dr. McCall immediately set out for the Onondaga Salines, and there engaged a citizen, the Hon. Thomas Spencer, former State Superintendent of Salines. Mr. Spencer accompanied Dr. McCall to Virginia, and superintended one share of the mines. Since his return home Dr. McCall writes to me, that so great have been the improvements that a saving of half the fuel has been made and of two-thirds the labor, and a better quality of salt is produced.

These mines are capable of furnishing millions of bushels of the best salt the globe produces, but the roads are so intolerably bad that the market is limited to 200,000 bushels of salt per annum.

Much has been said respecting the quality of American salt prejudicial to American interests. I apprehend that the subject has not been properly understood.

It has been urged that Onondaga salt contains a greater per cent of *chloride* of *sodium* (pure salt) than Turk's Island salt, hence that it is superior in quality. The quality of salt does not depend upon the greater per cent of *chloride* of *sodium* which it contains, but upon what other salts or substances are combined with the pure salt.

A simple statement will serve as an illustration. If two parcels of sugar are to be estimated as to value for family use, one contains 85 per cent pure sugar, and 15 per cent pure silex; the other containing 99 per cent pure sugar and one per cent *sulphate of iron*, (common copperas) the one containing the silex would be depreciated in value 15 per cent, while the other having 14 per cent more pure sugar, would be unfit for use. The Onondaga salt should be freed from the muriate of lime. That is the main impurity in that salt.

Sulphate of lime exists to the extent of from 8 to 15 per cent in most salt imported, but that is not injurious to salt for curing provisions, for it requires 500 lbs. of water to dissolve one pound of sulphate of lime. Muriate of lime and muriate of magnesia are combined with some salt and this renders the compound deliquiant. Salt should be free from these impurities.

Salt containing muriate of lime is the best for agricultural purposes on account of its refrigerating properties, condensing the atmosphere, and keeping the ground moist in dry weather. In using salt for curing provisions, more caution should be used in selecting the water of which the brine is made, than is generally practiced. Bad water is as injurious to the meat as bad salt.

In the boiling of salted meat it sometimes happens that the meat becomes tainted in cooking. A piece of meat put in a kettle containing cold water and heated up slowly, will pass slowly through that temperature at which putrefaction takes place, and thus it becomes tainted; whereas, if the water was in a state of ebullition when the meat was put in, no such result could take place, as the boiling point is higher than that in which putrefaction acts.

I have remarked that the salt mines of Virginia are upon the mountains. The altitude of these mines above the level of the sea

is 1,782 feet. An erroneous opinion is extensively entertained that salt water can be obtained by sinking wells to the level of the ocean. Fresh water is abundant below the level of the ocean. Much money has been wasted in sinking salt wells to the level of the sea, and I desire, as far as in my power, to correct the error which has been a source of loss to those who indulged this belief of finding salt water anywhere on a level with the ocean.

In the extensive investigations which I have made upon this continent in reference to the stratas of earth passed in sinking salt wells, I am led to conclude that the average thickness of loose earth upon this continent does not exceed 45 feet; below this is a crystalized mass

The salt wells at Kenhawa, in Virginia, are seven of them near 2,000 feet deep, and the greater the depth the colder the water. This fact presents the converse of the temperature of the artesian well at Grenoble, which is of nearly the same depth, and I have deemed it important to notice the fact in this communication.

There is another fact also which seems to be appropriate and proper to be mentioned here. In the deep borings at Kenhawa, the inflammable gas and the brine pass through the tubes with great velocity and force, but in the process of time coat the inside with a hard crystaline substance, and in one or two years close the orifice. It is thus fissures and cracks in the earth's crust are often filled.

The well at Lockpit, in this State, is 400 feet deep. Two veins of salt water are passed in the boring, which when combined are at the point of full saturation, the consequence of which is the instantaneous formation of crystals of transparent *selenite*, in flattened prisms with eight sides, of near one inch in length, an eighth of an inch in width, and of a sixteenth of an inch in thickness; structure minute laminæ, and when calcined become opaque. Thus our plaster beds are formed.

I have already extended my remarks to a greater length than I intended, and therefore conclude.

With great respect,

Your obedient servant,

E. MERIAM.

A VISIT TO LE ROY & CO.'S LEAD PIPE MANUFACTORY.

To T. B. WAKEMAN, Esq,

Superintendent of the American Institute.

Dear Sir—On Tuesday last, the 14th inst., I availed myself, in company with several others, of the polite invitation from the firm of Le Roy & Co., given to the officers and members of the American Institute, to visit their lead pipe establishment, located in this city at 261 & 263 Water-street, near Peck-slip, for the purpose of examining their machinery and mode of operation in manufacturing lead pipe and rolling sheet lead in all their various sizes and thickness, required for the numerous purposes to which these useful articles are applied.

On arriving at this establishment we were received by Messrs. Le Roy and Smith, under whose personal care and superintendence the whole concern is conducted.

On entering the manufactory you at first glance behold order and method in the arrangement of the various coils of lead pipe of all sizes and thickness, ready for inspection and easy delivery to their customers.

The pleasing sight of these coils of lead pipe of all sizes, from $\frac{7}{8}$ of an inch to 5 inches calibre, methodically arranged for an easy inspection of the article, tends to favorably impress the mind of either visitor or customer, that whatever is made at these works, under the guidance of such care and skill, may be relied on as perfect and complete in its kind.

We were informed by Mr. Smith that the lead pipe manufactured at this place will with ease sustain the regularly estimated hydrostatic pressure calculated for the various diameters and thickness for such articles, and that the manufacturers run no risk in warranting their pipes to be equal if not superior to any lead pipe in the world.

Mr. Smith informed us that their machinery was manufactured at the West Point foundry, and such is its perfect finish, including the rolling mill, that when the whole is in full operation you can scarce hear its movements in the second story above.

The machinery for making the lead pipe is an improvement upon the patent of Thomas Burr (who received a patent in England in 1820 for the first machinery for making lead pipe by hydrostatic pressure) and is so admirably adapted to its purpose, that no scientific engineer can see the same in operation without instantly comprehending the beautiful and simple arrangement of its several parts.

When operated under the care of their practical and scientific superintendent, (Mr. Smith) he requires only common laborers for his assistants, and with three men he can with ease make upwards of ten tons of lead pipe in 12 hours. The length of this quantity of pipe would depend upon its weight per foot. If estimated to average 1¼ lbs. per foot, it would extend upwards of two miles. This simple machine alone, if operated to the extent of its capacity, would make more lead pipe than is required for the supply of the United States.

This beautiful machine, including the furnace for melting the lead, and all other articles connected with the same is contained and operated in a less space than ten feet square; so compact and simple is the press only, that it stands within the superfice of about four feet square, and, including the force-pumps to supply the hydrostatic pressure, may be said to consist of but about ten parts, each of which admits of being made in such a manner as not to be out of order once a month, and when repairs are required, the same can be done by any common machinist.

The upward motion of the piston in the hydrostatic cylinder does not generally exceed five inches per minute, while its return, or the downward motion is about 12 inches per minute. The furnace used for melting the lead is about three feet deep; the melted lead is drawn from the same a little above the bottom, thereby insuring at all times nothing but pure metal to enter the cylinder from which the lead pipe is pressed. The area of this cylinder which receives the melted lead is about 1.400 cubic inches, and contains about 3½ cwt. to each charge. The time required for the cooling of the lead within the cylinder to the proper temperature for insuring a perfect pipe is about four minutes, and the time for each charge of 3½ cwt.

about 12 minutes. The whole operation is regulated by a time-piece, hence the uniformity in the goodness of the article made.

The rolling-mill is of the most substantial build, the rollers are 8 feet long and 20 inches diameter, with a reversed motion attached to the same, thereby saving much laborious manual labor and time for the quantity of work performed.

In this establishment the separate departments for making the pipes and rolling sheet lead, together with other matters and things belonging thereto, is so admirably arranged that the manual labor required therein is performed with comparative ease and facility.

This manufactory is an excellent illustration of what can be accomplished in the way of modern improvements, when conducted by science and skill. The special interest of the operators or workmen engaged in the manufacture of metals, constitutes a main feature in the construction of this improved machinery. The interest of owner and workman are so equitably combined as to insure a satisfactory and profitable result of their united labors.

A visit to this model establishment cannot fail to be pleasing and useful, particularly so to those engaged in such like work. Their accomplished and scientific Mr. Smith is ever ready to extend to all such a hearty welcome to the works of Le Roy & Co., 261 & 263 Water-street.

Remaining, dear sir,

Yours truly,

JOHN CLOWES.

Member of the Am. Inst.

New-York, March 17th, 1848.

NEW SYSTEM OF ARCHITECTURE.

NEW-YORK, *March* 6, 1848.

Dear Sir—Referring to a conversation with you this forenoon, and to a copy attached thereto, of a report submitted to the American Institute, "*on a new system of Architecture*," proposed by Mr. William Vose Pickett of London, the undersigned in compliance with your wish, has prepared a statement of a few facts in connection with the use of iron, and other metal in buildings and for other purposes.

Previous to about forty years since, when the means of forming cast iron in moulds to almost any shape, began to be generally better understood than before that time; and the capacity of the metal to assume such shapes was more fully ascertained, it does not appear from the published works, that iron was used as a building material, except in wrought or forged bonds and ties; the fact that iron cast in moulds, fully sprinkled with charcoal dust, before the metal is run in, does not sensibly oxidize by the operation of the atmosphere, only came to be generally known about forty years since, and has had a material influence in extending the use of iron.

The knowledge of the fact that wrought iron may be sensibly protected from rust or oxydation, by the galvanic effect of contact with zinc, and some other metals is due to a later period; and at this time a question is mooted, whether painting wrought iron with the ground chromates of iron, may not be better than the galvanic effects of zinc; and these, if approved, will give a variety of color, favorable generally to the plans provided by Mr. Pickett, whether employed on cast or wrought iron.

About the year 1808, the late Henry Maudsley constructed a large foundry in the southern suburbs of London, in a situation where from the water lying in the soil, beneath a stratum of clay about ten feet thick, he could not sink a founding pit deep enough for his purposes; he therefore contrived an arrangement which was thought new at the time, which was probably the foundation of a new system of building.

Knowing that the surface of the clay would bear almost any weight, he formed his exterior line around a large area, by piers and arches, sustaining an inclosing wall above; within this area he placed large flat disks of cast iron, fitted to receive and secure the feet of iron columns, of about twelve feet high, and fitted the tops of the columns to receive, and interlock the ends of lateral cast iron girders from the walls, and longitudinally of the building, leaving a central space dug out about seven feet deep, surrounded by a strong brick curb rising about twenty feet from the bottom, this made his pit; in the sections iron girders were formed to fit the haunches of flat arches in brick work, having a horizontal chord of about sixteen feet each way, with a rise of about twenty inches, and on the upper surface of these arches he laid the sand, and other earthy materials to form the moulding floor, thus avoiding the water beneath, and converting the ground floor of the building into a storehouse for the foundry above; this contained the melting furnace and steam engine for the blast, with all the needful convenience for such work surmounted by an iron roof covered with slating.

The unqualified success of this novel style of building, is believed to have done much in calling the attention of other engineers, and the public at large, to extending the use of iron in building, for it demonstrated the fact, that brick and iron could be combined to bear almost any weight short of breaking the metal, without the enormous cost of thick interior walls to carry the great weight, and sustain the heavy lateral thrust of semi-circular or elliptic stone or brick arches.

Up to 1824, the undersigned was cognizant of several buildings thus constructed, and had to do with the erection of some of them. The improved means of working and using iron within thirty years, would fill a volume to detail them; but the results are, that iron bridges, iron light houses for the coast, iron or fire proof factories, iron dwellings, iron churches and iron ships, are no longer novelties; in Great Britain, an iron light house for the entrance of the harbor of Havanah, built in this city for the Spanish government, by Mr. James Rodgers, is believed to be the first of the kind constructed in this country.

The "*Old School*," of architects and builders, struggled long and loudly against this "*innovation*," on their practice, and the jealousy of this class is not much changed by time and facts; the undersigned has met some instances of this character in even high quarters; but,

as the sum of all these objections resolves them into three points, it may be proper to state and refute the two first, and submit some prospective arguments against the third.

1st. The danger of lightning.

The answer to this, is, that a large mass of iron having a direct contact, or ready communication with the earth, furnishes at every angle, and every salient point; a conductor which silently but safely transmits the surplus or positive electric fluid from the air, to the earth beneath it. No proof is known to be on record that an iron foundry or machine shop, has ever been struck by a descending mass of the electric fluid in a thunder storm; though the undersigned has stood by the workmen in a large manufactory, and seen the lightning playing about the points of the cutting tools in the lathes, so severe has been the storm raging around the factory; the inevitable *mechanical* conclusion is, that the number of points separately, abstract, divide, and disarm the most tremendous agent of destruction we are yet acquainted with, and by quietly transmitting it to the earth, render it harmless. This objection was raised twenty-five years ago by the then directors of the English East India Company, to the construction of fire proof buildings for their mints, at Calcutta and Bombay; but the experience of their successors has shown the contrary.

The second objection is that the contraction by cold and expansion by heat, will injure the walls of brick or stone, and will risk disruption of the parts in a metal building.

From 50° of Fahrenheit *below* zero, to 200° *above* zero, the contraction or expansion of a cast iron beam forty feet long, is only a small fraction more than one quarter of one inch; and although this exerts a power like freezing water, which nothing can withstand, it is rendered harmless, by a provision for the ends to slide on their beds in the walls, or on the tops of the intermediate columns, and none of the parts are disturbed; and although the capacity of cast iron to bear a *blow*, is somewhat lessened in severe cold, no fact is known to prove, that the beam is affected by cold in the capacity to bear the weight which it is generally supporting.

Wrought iron expands and contracts more by the same degrees of heat and cold, than cast iron; but these amounts are now so fully known, that a competent engineer can provide for the differences, when cast and wrought iron are employed together; and where

either is employed *alone*, the peices of metal are so nearly homogeneous, that the contraction or expansion will be alike in proportion to size, all through any number of pieces in any given structure, and will not in the least endanger the general permanence.

The third objection applies to the cost, and is perhaps the only point that has any real claim to consideration.

The annual and perhaps wasteful destruction of timber, probably points to the fact, that this material will soon be so much less in supply, that the price will be raised in proportion; while the improvements in the manufacturing the exhaustless iron supplies of the country, are more likely to lower the cost of the material, than to raise it.

With this double contingency in view, any information that will spread the knowledge of the fact, that iron, which is indestructible by fire, that protects itself from lightning, is impervious to weather, and to vermin, permanent in place, but easily removable, and reconstructable without injury, may be looked forward to, as ready to furnish many more *peaceful* blessings to the human race, than it now does, and on terms that will make it available for these uses, where cost and permanence are duly weighed against cost and destructibility of timber.

Those who have not considered this subject may treat these suggestions with levity, or indifference, perhaps with ridicule and derision.

But the undersigned was among the earliest advocates of ocean steam navigation, and iron ships, and the derision and ridicule he then encountered, has fully recoiled on those with whom it originated. He therefore "*abides his time*," and remains,

Dear sir,

Yours very truly,

WM. SERRELL.

Civil and Mechanical Engineer,

No. 201 Broadway, New-York City.

To T. B. Wakeman, Esq., Am. Institute.

(Copy.)

The Committee, to whom the November 1847 Meeting of the American Institute referred the work of Mr. William Vose Pickett, of London, "*On a new system of Architecture,*" presented at that meeting, by Mr. Serrell, on behalf of the Author, respectfully report:

That the work is divided into about ten chapters, which, commencing with an investigation into the forms that can be obtained with stone, as a building material, proceeds to show, that these forms are limited by the nature of the substances employed; that the most beautiful ornamental forms in nature, cannot be produced in stone, without a cost that prohibits the employment of these forms; that on this ground the genius of the architect is cramped, and confined, the beauty, both internal and external, of private and public buildings, is confined to the limited range of certain orders of architecture, commenced by the ancients, and matured by time and the efforts of successive generations, to the present conditions; but still bearing about them the impress of the fact, that the nature of the material, and the cost of working it into forms of natural beauty, prevent any great improvements in the style of buildings; and finally, that the monotony of the color acts against the possibility of embodying any new and harmonious association of colors, in the interior or exterior ornamental portions of buildings, constructed with stone.

The author then proposes iron and other metals, as substitutes for stone; and goes, ably and lucidly, into the general questions of cost, durability, economy of space, security from fire, dryness, cleanliness, temperature, light, and other general conveniences, the facility of construction, taking down and removing, and re-constructing without injury; all of which are pertinently put and ably sustained, in the work under review of your committee.

Mr. Pickett then elucidates the subject of ornament, as applied to constructions of metal materials, and shows how vastly this division can be extended, by using metal in place of stone. The positions stated and maintained, show that an immense increase of means may be used to effect both an entire change in the character and number of architectural ornaments, as these can be multiplied into almost all the endless varieties of natural form, and additionally beautified by the use and harmonious blending of the natural colors of the parts

imitated. The proper limits of a report like this, prevents such a detail of references or quotations, as the work itself may be considered to deserve, but the Committee feel bound to state their impressions, that the whole work of Mr. Pickett conveys the result of deep original thought, and active scientific research, in language, the characteristic beauty of which seems to have been almost inspiration, raised by the unfolding value of the matter, as he has followed it out.

The Committee are aware that the social and pecuniary position of few in the United States, will admit of building metal houses at this time, but Mr. Pickett has ably laid out the means and inducements for the next and future generations to act on in such buildings, and the present generation are probably deeply indebted to him already, for your Committee think it likely that the increasing beauty of the articles of furniture, and of all sorts of ornaments in iron, shown by the designs in the London Art Union, may have been partly caused by the very publication under review. And your Committee may, perhaps, not go beyond their duty, in congratulating their fellow members of the American Institute, that there is certainly one man among them who can fully appreciate and partly carry out the valuable suggestions of Mr. Pickett, for proof of which, they refer to the several iron articles of use and ornament now in the repository of the Institute, and placed there by Mr. Jordan L. Mott, confirming the fact, that men of kindred countries must have kindred minds, on everything that is beautiful in nature and art.

In conclusion the Committee desire to submit the following resolution:

That Mr. William Pickett be elected an honorary and corresponding member of this Institute, and that the proper officers notify this to him, with the congratulations of the society, on the able and beautiful manner in which he has elucidated his new system of architecture.

(Signed)

WILLIAM SERRELL, *Chairman.*

IMPROVED MANUFACTURE OF IRON.

BY JOSEPH DIXON, of Jersey City, N. J.

JERSEY CITY, February 8, 1848.

T. B. WAKEMAN, ESQ.,

Corresponding Secretary of the American Institute.

Dear Sir—In compliance with your request, that I should give you some account of the new article of iron which I have succeeded after several experiments in making, I would say that next to inventing a useful improvement in the arts, it is my greatest pleasure to make its merits known. I will cheerfully give you as good a description of its properties and uses as my present time will allow.

The plate which I had the pleasure of showing to the officers of the Institute, was the largest specimen of pure iron, except another mass of forty pounds of my own manufacture, ever made. You are probably aware that some few hundred grains have been shown as the result of laboratory experiments in Scotland, by David Mushet, and published in 1840, before which malleable iron was always considered impossible, and consequently all hopes of making perfect iron must have been abandoned. Mr. Mushet does not even admit of the possibility of fusing it in any quantity which could be made available for any practical purposes. His experiments only prove its fusibility, without any result which would indicate the refining of the iron while in that state. My success is in the practicability of making masses of any magnitude, and then in purifying them while liquid.

Iron is found in the market, of various qualities, and known to workmen as "hot short," or "red short," and "cold short," from the properties it possesses of bearing greater or less degrees of heat, the one being very brittle when hot, and the other when cold. Mr. Mushet says:

"I have met with no manufactured iron entirely free from carbon," but the carbon is not the cause of the imperfection of all iron hitherto

made. I arrive at different conclusions from Mr. Mushet, as the minute quantity of carbon in any bar of iron would not be a cause of trouble to the workmen, nor of complaint in the uses to which it is applied.

Common bar iron is a natural alloy of the several metallic bases of the earth with which it is associated. The separation of these leaves the iron in the state of chemical purity, and if iron were thus purified, we should have no distinctive or different qualities. This is what I have succeeded in doing, so far as the *purity* of the metal is concerned, but this is not the only objection to the use of this metal which I have overcome.

Bar iron is very imperfect in its *mechanical structure*, having merely a series of the *lamina* interspersed with the *scoria* of the smelting process, which being mixed with the metal, are still retained by the lamina to whatever length they may be drawn out, and from which no subsequent welding or working of the bar can possibly free it. We have before us too many proofs that iron once separated, can never again, even under the most favorable circumstances, be *perfectly united*, by any process of *welding*.

This iron being chemically pure and mechanically perfect, its superiority for almost any of the purposes of art, are too obvious to need enumeration. It may not be superfluous for me, however, to mention a few instances where its application would be of service to the art.

Our ingenious and scientific countryman, Jacob Perkins, has long felt and expressed the want of such iron in an art invented by himself, for copying his engravings, by transferring them to rollers—a process now generally adopted by engravers, and by whom its importance will at once be seen and appreciated. The common practice with them now, is to take *cast steel*, and after forming it into the shape wanted, to decarbonize it on the surface in order that it may receive the impression of the engraving. It is then again submitted to the process of case hardening, in order to render it fit for the intended purpose, viz: to imprint other steel plates with. But here is its value more perceptible, for the plate cannot be hardened (if large) without imminent danger of breaking. For this reaso it is left soft, and soon becomes worn out in the hands of the printer, whereas, if the plate would admit of being hardened, it would give any number of impressions. Thus, if a large picture or map which cost its engraver some hundreds of dollars, and from which only a

comparatively small number of good impressions can be taken, were made on *iron*, it could easily be hardened on the engraved side, without the least danger of injury. An unlimited number of "proofs" could be worked off, while the plate would remain as perfect as the artist left it. This would be the case especially with that delicate style of engraving called mezzotint.

It is also admirably suited to the manufacture of every description of *fire-arms*, from the smallest pistol to the largest "*peacemaker*," as well as for mill rollers, wire, and all the purposes where steel is now used in moving machinery. Many parts of the latter, which are now made of cast steel, would be better and more readily made of iron, could it be obtained as sound and perfect as cast steel, as steel does not admit of being hardened, where in many cases this quality would be very desirable. The journals of machinery, and even the mandrills of large lathes, are used in a soft state, as the risk in hardening is so great that no person would be willing to incur it, but would rather submit to the inconvenience of frequent renewal. There are numerous other uses to which it can be very profitably applied, but which will naturally suggest themselves to every appreciating mind. In short, iron made by my process is free from all flaws, seams and blemishes, which have hitherto marked the best iron.

The certificate of one of the best judges of metals in the country, who was formerly one of the proprietors of the Novelty Iron Works in your city, is all that I deem necessary to add on this subject.

JERSEY CITY, 9th February, 1848.

"At the request of Mr. Joseph Dixon, I made some plates (for engraver's use) of iron, which he informed me was prepared by melting and casting into ingots, the Adirondac refined bar iron. The material was sounder, more perfectly homogeneous in its texture, than any other iron which I have ever seen, and I should think it is admirably adapted to supply the place of the steel plates now so generally used for the finest engravings, where many impressions are required from the same plate, as it requires no decarbonization to fit it for being engraved upon.

It will be more easily worked with the graver than steel, even after decarbonization, and may be case-hardened after receiving the engraving, at least as well as the decarbonized steel plates.

JOHN D. WARD.

From the same metal that I use in preparing my iron, I have also succeeded in making a superior article of cast steel, and am now in treaty with a company for its extensive manufacture at this place. I subjoin another certificate from the same gentleman who tried the iron.

JERSEY CITY, 8th February, 1848.

"Mr. Joseph Dixon brought me three specimens of cast steel which he informed me he had made from 'Adirondac iron,' and of which he desired me to ascertain the quality. It was made into chisels, turning tools, &c., and found to possess an unusual degree of strength, and well suited for every purpose to which it was applied. It required a rather higher heat for hardening than some of the best kinds of steel in common use, but its quality did not appear to be injured thereby, and in consequence of the mildness of its temper, it was welded and worked into any requisite form with the greatest facility."

JOHN D. WARD.

You are doubtless aware of the amount of cast steel annually consumed in the United States, as well as of the fact that it is not manufactured in this country at all. A great desideratum in the arts and an additional element of national wealth is about to be developed. No portion of the Union will be so much benefited by it as the Empire State, whose exhaustless mines of the richest iron ore, will become vastly enhanced in value.

I herewith send you a bar of the iron and the steel made by my new process.

I hope at your next annual fair, to have some tons for the examination of the thousands who yearly visit your collection of specimens of American ingenuity and industry.

I beg you to excuse the haste with which this communication was prepared, as the pressing requirements of business prevent my bestowing that care upon it which its importance requires.

I shall be happy to give you or any person interested in the subject, all the information you or they may desire.

I am, sir, with great respect,

Very truly your friend and servant,

JOSEPH DIXON.

P. S. Since writing the above I have received a letter from Archibald McIntyre, Esq., of Albany, at whose request I made the cast steel from the Adirondac iron. It so fully expresses his entire satisfaction with my result, that I send it to you as an appendix to this communication.

J. D.

ALBANY, February 18, 1848.

Dear Sir—I have been exceedingly gratified by your success in melting cast steel with anthracite coal as a fuel, and by your repeatedly producing cast steel, of the very best quality, from our Adirondac iron. I have heard of various tests made of the steel produced by you at New-York and Jersey City, and of that sent to me here by Mr. Henderson, which fully satisfies me that were we to erect works to supply the market, we could readily sell all that we could possibly make. The demand for cast steel in the United States is immense, and is constantly increasing. If, then, we could supply half the quantity annually required in the country, (and I think we might without difficulty, by the application of sufficient capital) it would be of great importance to the country as well as to us personally, and to such gentlemen as might unite with us in the enterprise.

I am confident that we have at Adirondac, iron ores, which I may say are in exhaustible deposites, for thousands of years, requiring only to be quarried (not mined) at a small expense. All these Adirondac ores produce the same quality of iron as that used by you. Several tons of cast steel were made in England from this iron prior to your having made any, and the reports were that the iron was fully equal to No. 1 of the celebrated Dannemora iron, for producing superior cast steel.

I think I informed you that about a year ago we contracted with Mr. William M. Picksley, of Sheffield, England, to remove to this country (he was the person who had made cast steel successfully in Sheffield from our Adirondac iron) to superintend the cast steel making business for us at Adirondac, when we encountered a heavy expense last season in making preparations for extensive steel works.

When Mr. P. contracted with us, he was under the impression that melting could be effected with charcoal as a fuel. On his return to Sheffield, however, he made the attempt, but utterly failed, and so he wrote and expressed a desire that we might at once erect the steel works at Cumberland, where there was abundance of good bituminous

coal for coke, as no other fuel would answer, as he thought, that anthracite had been repeatedly tried in England, but that the result was always a failure. We at once decided against his proposition of erecting steel works at Cumberland, or at any other distant place, if we could possibly avoid it. We thought we would first try whether we could not effect, by brother Jonathan's ingenuity and skill, what John Bull pronounced impossible. Fortunately we were soon directed to you, and you erected a small trial furnace, and you have succeeded to admiration, in melting, with American anthracite, and in making from our Adirondac iron, cast steel of the very best quality.

Whether your success in melting was owing wholly to your method of using anthracite, or in some degree to the character of our anthracite being different from the Welch, (that which was probably used by the English) I know not, but it is at any rate certain that you have accomplished what John said was impracticable.

You have tried charcoal as well as anthracite, at our request, but in this you succeeded imperfectly. I think it probable, however, you might by change of the size and form of the furnace, succeed, yet, as you are clearly of opinion it would not be economical to use this fuel, I am satisfied that anthracite is that which alone we ought to think of using as the melting fuel, and that our steel works ought to be erected where that material can be cheaply supplied, and our Adirondac iron be transported at a moderate expense. If this were done, it really appears to me that a superior cast steel might be made at a less cost than at any other known place in the world.

I am, very respectfully, dear sir,

Your most obedient servant,

A. McINTYRE.

Mr. Joseph Dixon.

EXPLOSIONS OF STEAM BOILERS.

BY JOHN CLOWES, C. E., New York.

NEW-YORK, February 22, 1848.

T. B. WAKEMAN, ESQ.,

Superintendent of the American Institute.

Dear Sir—Your note of yesterday was handed to me this morning. You say "for this year's volume of the transactions of the Institute, it is desirable to have a document on explosions of steam boilers, and other serious accidents to the working-gear, which so frequently occur on board steamboats," and as I was on the committee for examining steamboats, during the last fair, the officers of the Institute respectfully solicit my views on this subject.

Permit me to say I wish the Superintendent had selected some other member of the committee for a report on this very important scientific subject, whose chemical knowledge and practical experience was superior to anything I possess, particularly so because the yearly volume of the transactions of the American Institute form a sort of encyclopedia, or record of the most valuable improvements and inventions in agriculture, commerce, manufactures and the arts, for the time being.

The subject you have proposed, is one of no ordinary character. The explosions of steam boilers, bursting of steam chests, and breaking of the working-gear of the steam engine, frequently cause such a serious loss of life and property, particularly so on the western rivers, where the high pressure engine is in general use, yet these serious accidents too frequently happen to both high and low pressure boilers, and the working-gear of their engines.

Explosions of steam boilers, burstings of steam chests, and other serious accidents to the working-gear, were of rare occurrence in the early history of the steam engine, while steam of a lower temperature

was in common use. These dreadful accidents seem to have originated and kept pace with the use of high pressure steam, or steam of a very high temperature. Steam of thirty pounds or less pressure to the square inch on the piston, is the most elastic, yielding, manageable and free from danger of any known prime mover, and at no time, nor under any circumstances, can such elastic steam exceed the cohesive strength of the weakest part of said boiler, before it burst open. That is to say, the pressure of such elastic steam can at no time exceed the cohesive strength of the weakest part of the boiler in which such steam is generated.

By a careful examination of the causes of these explosions, and other serious accidents to the working-gear, it is evident that this explosive property or element, be the same whatever it may, is generated by the high temperature of the materials contained in said boiler, and is some other than pure elastic steam. Although steam of great pressure may burst open a cylindrical boiler laterally in its weakest part, it could never rend the boiler asunder endwise, because the strength of the boilers at the ends is nearly double that of the body of the boiler. Yet in very many of the recorded accidents, the end of the boiler was burst out and thrown several hundred feet. This certainly could only have been effected by an almost unlimited explosive power which is not contained in the properties of elastic steam.

We can form some accurate idea of the strength of this explosive element, by a careful examination of the strength required for the boilers, working-gear and frames, as now used on steamboats.

For the first class river steam vessels, their measured strength is at least five hundred pounds to the square inch on the end of the piston, and for sea-going steamers, upwards of seven hundred pounds. This enormous strength has been shown to be necessary by long continued experience. It is evident from the frequent accidents to the working-gear, as well as the boilers, that this great strength is no more than equal to the force which occasionally acts on the piston.

Although fifty pounds to the square inch on the safety valve for high pressure engines, is perhaps more than their general load, and for low pressure engines not one-fifth this load is used, yet the average strength of the boilers and working gear, is required to be made to resist from ten to fifteen times this pressure, and whenever the temperature in the boiler exceeds that required for generating

elastic steam only, the working-gear or the boiler are often broken and scattered to the winds as so many rotten sticks.

This explosive element sets all calculation at defiance, and it is certain, therefore, that there does exist within the boiler and cylinder, at certain times, a power far exceeding the resistance offered by the enormous strength of the boiler and working-gear.

Much of the mysterious operations of this explosive power, seem to have originated in supposing that explosions of steam boilers and breaking of the working-gear, were an exception to other explosive phenomena.

By a careful comparison of the explosive effects of phenomena from powder, lightning, inflammable and other explosive matter, it will be seen that the same explosive element is alike prevalent in each. For example, the bursting of cannon and guns. It is a well known fact, that if the muzzle be barely held under water or closed with a cork, and fired with only an ordinary charge of powder, the bursting seldom or ever fails, although the cohesive strength of the breach may be twenty times the estimated strength required for a regular charge of powder. The explosive effects from lightning and inflammable gas, break and scatter every opposing resistance.

In steam boilers the safety valve and steam guage seem to indicate with sufficient precision, the variations in the strength of elastic steam, but neither safety valve nor steam guage are of any value to indicate the presence of this explosive element.

One of the most scientific works of the present time, recently published by Mr. Oliver Smith, a member of the American Institute, in pages 57, '8 and '9, mentions the explosions of steam boilers, and says: " the elasticity of steam will have very naturally some, though comparatively speaking, very little effect in this case."

Also Mr. John Wilson, a scientific engineer of this city, has recently published a pamphlet on the causes and effects of explosions in steam boilers. In this work the author fully investigates the explosive element of powder, lightning, gas and explosive matter, and concludes that the effect and phenomena are alike in each. In England and other parts of Europe, scientific investigations on this subject have arrived at the same conclusions. But perhaps the most apparent resemblance which obtains between the explosions of steam boilers and the explosions of electric fire, fire-arms when dis-

charged with the muzzle closed, and the blasting of rocks with loose sand on the powder without tamping, as the bursting of Captain Stockton's big gun, which was alleged at the time to be owing to an interval between the powder and the wad.

Here the circumstances of each seem to establish the analogy between the explosion, viz: an interval or open space between the place of generation and the covering or stoppage, no matter how slight the same may be, the explosions of steam boilers, or accidents to the working-gear, are never known to take place only when the engine is in motion, hence the interval in the boiler as well as the open space in the steam chest or cylinder. These slight covers or obstructions evidently prevent the escape of the caloric which has given up its combination with the gas, and immediately deprives the surrounding metal of one of its constituents, which is part and parcel of itself, thereby reducing the strength of the metal, destroying its cohesive property, and causing an explosion.

The laws of elastic fluids, gas, vapor or otherwise, have universal and uniform operation, and to prevent explosions of steam boilers and serious accidents to the working-gear, it does seem that a correct knowledge of these elements, and the changes or metamorphoses they undergo when combined with other equivalents, is a necessary requisite in the qualifications of the engineer.

The prevention of the frequent loss of life, and great destruction of property caused by explosions of steam boilers, has often occupied the meetings of the scientific members of the American Institute. Some two years ago, Major Mapes mentioned his intentions of having a committee appointed for the purpose of considering this subject, and reporting on the same. He was the first to suggest a plan which met the unanimous approbation of his associate engineers. It was their opinion, if it could be carried into effect, and sanctioned by the general government, regulated by appropriate laws, that explosions would seldom, if ever, occur. But should such an accident happen, there could be but one opinion as to who was to blame. The person in charge, for the time being, of the fire-department, and the working of the engine, should alone be held responsible; he, and he only, should be amenable; for to him, and him only, ought to be intrusted the sole management to regulate the fire for generating the required quantity and pressure of steam, and the supplying the boiler with water. Major Mapes proposes that no person should be entrusted with the working of a steam engine on

board a steam vessel, but a practical scientific mechanic, and one who had a thorough knowledge of steam and the steam engine. His competency to occupy such a situation, should be known to owners of steam vessels, and the public at large, by a proper uniform badge, with a diploma in his possession, obtained from a practical scientific board of professors in the science of steam, and the working of the steam engine. The members constituting this board of examiners for the first year to be appointed by the board of engineers of the general government, and afterwards chosen by the members of the profession of engineers, regulated by proper and appropriate laws.

The great influence such tokens or badges have upon the human mind, can easily be inferred from their use in the navy or army, when conferred, as is already understood, as proper and salutary to effect the object contemplated by this system of distinctions.

Some forty years practical experience with stationary engines and steamboats, has fully satisfied me, together with many of my scientific associates, that the most effectual way to prevent explosions and accidents to the working-gear on board steamboats, is a sound practical, scientific and mechanical education in the profession of engineering, assisted with the most improved feed pumps and by hydrostatical water guages, which will, under all circumstances of foaming, or otherwise, unerringly indicate the true level of the water in the boiler. The ability of the chief engineer to be ascertained by some such rule as especially mentioned above. This would do more in preventing explosions and accidents to the working-gear, than all the inventions that have or ever will be invented for that purpose.

The situation of chief engineer on board a steam vessel, is manifestly one of great responsibility, and enough is already known of the explosive element, to demand that the head or chief of this department should be educated in the science of his profession, the same as the physician, or any other scientific professor. The duties of an engineer certainly require that his qualifications should be equal, if not superior, to those now deemed necessary for the head of a farm, or agriculturist, who is required to possess both practical and scientific knowledge of the department designed for his future sphere of action. Those who are intended for the vegetable or animal departments, are required to know the elementary properties of the food they propose to raise of either kingdom. Vegetable physiology is as necessary for raising the various productions of the earth, as animal

physiology for the health and happiness of the animal life. And in the engineers department, under skilful management, lifeless substances are made to assume the properties and powers of vitality. Guided by the science of chemistry and mechanics, a prodigious power is evolved, which is only dangerous and destructive when operated by an unskilful engineer; for, in the care and keeping of a practical, scientific mechanic, it is made an unspeakable blessing to the human family. Its nature partakes of the properties of the elements on which it feeds. Its natural life is not for a season only, but for all time to come. Its vitality will endure until the last trumpet shall sound, and its death take place only when the elements shall melt with fervent heat, and time shall be no more. Such a machine certainly deserves the protection of the land, and the engineer an honorable badge, is the opinion of, dear sir,

Yours, with esteem,

JOHN CLOWES,

Member of the Am. Inst.

STREET PAVING.

BY M. E. THOMPSON, of New-York.

STREET COMMISSIONER'S OFFICE,
New-York, Feb. 25, 1848.

Dear Sir—In pursuance of the reference to me by the American Institute on the subject of "*Street Paving*," I enclose you the following report, in which I have endeavored to express my views and the results of my observations and experience.

MARTIN E. THOMPSON,
Street Commissioner.

T. B. WAKEMAN, ESQ.,
Cor. Sec. of the Am. Institute.

The common pebble pavement which is in general use here has been laid in the following manner: first the road bed is excavated to the depth of about two feet, the full width of the part intended to be paved, or from curb to curb of the side walks; the space is then filled with clean sand and gravel to within six inches of the top of the pavement, and well rammed or rolled. The paving stone, of an oval shape, of from six to ten inches in their longest diameter, are then bedded into the sand, with the smallest end downward, being set perpendicularly and as close to each other as they can be made to fit; they should then be well rammed, after which they should be inspected, taking out all soft or fractured stone; they should then be covered with sand, and be well brushed with a broom made of brush, or some other tough elastic twigs of trees, till the top of the pavement is bare, a second ramming should then be given, leaving the surface as even as possible, and if a heavy roller could then be passed over the surface it would add much to the solidity of the pavement. After the final ramming or rolling has been finished it should be covered with about two inches of clean, sharp sand, to be pressed into the interstices by the travelling of carriages. If the pavement could be left to receive a heavy rain, and then to remain till the sand had become fully dried to the depth of a foot below the

pavement, the solidity of the whole mass would be much increased, but to use the road immediately after a heavy rain when just finished, *is very injurious*, as the whole mass will then sustain much injury if ever so well rammed.

There are two modes of placing the stone, one is to commence at the gutter at one end, then returning on the other side of the street and paving the opposite side back to the place of beginning, but I have found by experience a better method was to commence at the opposite gutters at the same time keeping the sides in advance, and finishing up both to the centre at the same time. For in the first instance the stones are spread apart, or separated, while in the other they are driven closer together by ramming. In all cases the largest stone should be placed at the gutters, while they should be diminished in size as they approach the centre; the pavers are apt to set the stone up in an oblique position to cover the greatest space with the smallest amount of stone, and then to force them up by ramming in the sand; this is one of the causes of the pebble pavement giving out so soon, as many of them are found to do. If a pavement of good materials be properly laid, it may be made to last many years for all ordinary purposes, but nothing of that description can be made to stand the wear and tear of our city omnibusses, with a tire of but two and a half inches, and a weight of some two or more tons, and driven with a speed of from five to six miles an hour. No pebble alone can be confined in a bed of sand sufficient to resist their force for any length of time, while I believe they would run for years with a four inch tire, without doing much injury to the pavement.

But a much more durable pavement may be made with square blocks of stone laid similarly to the pebbles, except that they must be laid in a diagonal line across the road. After the carriage way has been excavated, and filled with sand and gravel to the depth of eight or ten inches, the surface should be covered with stone chips, (such as are found in a stone cutters yard) to the depth of the three or four inches, well rammed into the sand, then covered with a coat of sand from one to two inches deep, upon which square blocks of stone may be placed in the rough state, as taken from the quarry, being merely hammer dressed. They may be from five to ten inches wide, and from ten to twenty inches long, but of a uniform depth, and each course should be of a uniform thickness, for the purpose of keeping the courses straight, which is essential to its durability, but in every other particular the stone should be sanded, rammed and

rolled in the manner as described for the pebble pavement, but even such a manner is only of service where the traffic or travelling is slow, and will not stand against the destructive power of the violent concussions produced by rapid travelling. I find in the communication to your honor from the committee appointed, an inquiry respecting the experiments recently made in the city of New-York, and as I deem that enquiry refers to the "Russ Pavement," I would refer to a description of said work, which may be found in the "Report of the American Institute," to the Legislature of the State of New-York, April 20, 1847. I would also refer to a communication from ex-Mayor Harper to the Common Council, January 6, 1845, containing a minute description of the manner of constructing the square block pavement in the city of London, a copy of a part of which is herewith inserted: "An excavation is made from gutter to gutter to the depth of twenty-four inches, the space excavated is filled with concrete to the depth of fourteen inches, rising towards the centre at the rate of six inches in twenty feet. The concrete is made of granite clippings or granite ballasts (the same that is used for Mc-Adamizing roads) and sand and hydraulic lime in powder, six parts of the former and one part of the latter, which when properly mixed sets and becomes a hard solid mass. The surface must be made smooth, and when set the mass of concrete serves as the foundation of the pavement.

"The pavement is either of wood or of granite, the latter is here recommended. It is composed of blocks ten inches in length, ten inches in depth, and five inches broad, rough on the upper surface and sides, and the latter tapering very slightly towards the bottom. They are laid diagonally (see plan) so as to give horses a good foot hold and prevent them from slipping."

"They are not pounded (for this would break the surface of the concrete) but merely laid side by side in regular order. The interstices are then filled with liquid mortar, which adhering to the rough edges spreading a little at the bottom, and combining with the concrete beneath, forms the whole into a solid mass twenty-four inches thick, not likely to be broken, and capable of enduring unshaken almost any amount of travel by the heaviest vehicles."

In the description of the different materials given above, granite is always referred to as the class of stone proper for pavements, but it is not always the best material. Gneiss is frequently used for pavement under the same generic term of granite. This is still ob-

jectionable for the purpose of pavement, as it is subject to crumble, and the gneiss is apt to flake on the edges, and thereby soon shew a round surface. There are other formations of stone which may be used in the absence of the above named materials, the durability of which depends as much on the formation, as the composition of this stone is of the most durable nature, and the formation being uniform and compact it is not subject either to crumble or flake on the edge. Our city is highly favored with an abundance of the above species of stone, the trap formation commencing some miles below the city on the western shore of the Hudson, and extending to some thirty miles above, forming what is termed the pallisades, from which most of the boulder formation from which our pebble pavements are made, and from which the material of the famous Russ Pavement is procured in the natural prismatic form in the quarry, where they are broken and dressed to the required size, thence they are transported to the city for use. This city is remarkably well supplied with the other materials required to complete the finishing of a street, such as curb and gutter and flag stone. All of the above materials are furnished from a range of schistus running from the Helderburgh Mountains, in Albany county in this State, in a southwest direction into the interior of the State of Pennsylvania. The size of the curb, as required by our city ordinances, is 20 inches wide, by six inches thick, and in length, of not less than three feet, the gutter stones are required to be fourteen inches by six inches thick, and in length, of not less than three feet square, and the flag stones are from two to six feet square, and from two to three inches thick, and laid at a cost from 10 to 20 cents per superficial foot, curb six to twenty inches at 30 to 35 cents per running foot; preparing the road bed, including excavating two feet deep, and filling with sand and gravel one foot deep, at 16 to 18 cents per yard, amounting to about 46 to 50 cents per superficial yard when finished. The probable cost of the dry square block pavement as described in the accompanying diagram would probably be about $3 per yard, while the cost of that laid by Mr. Russ has been about $5 per superficial yard, when finished complete as described in the article above referred to. A copy of the Annual Report of the American Institute, made to the Legislature April 20, 1847, will accompany this communication.

ROADS AND STREETS.

BY CHAS. HENRY HALL, of Harlem, N. Y.

New-York, Feb'y 24, 1840.

THADDEUS B. WAKEMAN ESQ., *Am. Inst.*,

Sir—In laying down roads and streets, the first principle is to prepare the *grade of a suitable inclination* to carry off water.

Second. The substratum should be made perfectly *firm*, having drains to carry off surplus water, through the centre or at the sides of the work; in all cases the bottom should be of earth, on which *broken stone* of angular form should be evenly placed, having from the centre to the sides, a descent of one inch to ten feet.

Over the stone concrete should be placed, and then over it stones after "Russ'" plan laid, and then cemented with 6 parts sand, hydraulic lime mixed, makes a *solid mass.*

Third. The mode of construction should be such as to insure long continuance, and save expense in yearly repairs; the Roman roads were constructed upon the above principle, and many of them remain in our day, objects of wonder and are worthy of imitation. In modern times roads have generally been constructed without attention to drainage, or the selection of suitable materials, and the result has been the *freezing* and *thawing* of the ground from time to time during the winter, and the settling of it in the spring, leaving inequalities, and raising up stones of large as well as small size, rendering repair necessary to the road at heavy annual expense; which would not have been needed had a different mode of construction been adopted.

The *Third Avenue* on this island was first constructed upon the *old plan* of laying down at the sides and bottom of the road, large *round stones* commingled with small ones, and earth placed over all, and afterwards well rolled; when finished the road looked well, and the travel over it was expeditious and comfortable. It was soon

found however, to be affected by the *frost*, and the upheaving of the large stones caused inequalities, holes and ruts throughout the road, and finally it became almost impassible in the winter and spring months. This road was made by the *corporation* at great expense, and with the *yearly repairs* for about fifteen years, amounted to the enormous sum of about two hundred thousand dollars, for only eight miles in distance, and had become in bad condition to travel on, and caused constant complaint from the public; at length the common council determined on reconstructing the road, and appointed a committee to investigate the matter and make a plan that might ensure a durable road; the result was entire success—an authority was given to the aforesaid committee to go on with the projected work. In adopting a plan of construction, there was much difficulty, as advices came in from all quarters, some recommending one plan and some another; however, the committee resolved on giving an entire new grade to the *road bed*, cutting down hills and filling up declivities, and making every new grade under the supervision of the late able engineer Judge Wright; under drainage was effected to ensure a dry bottom at all seasons, on which to lay the requisite materials for a permanent road. The views of the American engineers who constructed the "*Cumberland road*," were adopted by breaking *round* stones, and never using any *not angular in shape*, and rejecting round ones in all cases. This mode of using stone for roads, has been called "McAdamizing," as *Mr. McAdam* first introduced into England this method of preparing stone for roads, and the committee from time to time, were pestered with advice from "*McAdam men*," and likewise by criticisms in the newspapers abusing the "stupid fat aldermen," for not adhering implicitly to the plan of that gentlemen in making the road. A fact at the time transpired, which may not inaptly be mentioned here relative to Mr. McAdam, which came out in a correspondence of the committee, with an engineer of the *government*, who acted on the Cumberland road; it appeared that *Mr. McAdam* had been employed as a *laborer* on the above named road, where he gained his knowledge of road making, and then returned to his native country where he became a great *road maker* under the British government, united with his sons, born in this *country*, and thus acquired fame for an invention *not* his own. It was found that the rocks on this island were not sufficiently hard to ensure a permanent road, with the exception of some *boulders* which on blasting were found to be exceedingly hard, and such as would not grind away in wearing; these consequently were selected and broken finely, and were used for the upper strata of four

inches in depth, and the *common stone* placed underneath them; of the last there were two strata, the one at the bottom, broken also angularly and placed regularly over the ground, and over each other to the thickness of from six to ten inches, as the road bed was more or less dry and firm; then another layer more finely broken of the same sort of stone, and raked smoothly; then was put over perfectly even the small hard blue stone, leaving the surface with a descent from the centre to the sides of one inch to the foot; upon the whole was then placed fine sandy gravel evenly thrown with shovels and raked of equal thickness, just enough to fill up all interstices between the broken stones. A large *iron roller* of many tons weight was then dragged by three pair of oxen over the road, and continued until the surface was entirely hard, compact, and even in every part of the road, and *impervious to water*. Being finished the public travel was admitted over it, and it has remained in a firm state for nearly fifteen years past, dry in all seasons of the year, notwithstanding great neglect in suitable yearly repairs. This road cost the sum of $125,000, and with small repairs yearly will last forever; whereas previously the old road had cost at the end of fifteen years about $200,000, and was then almost impassable; it has been asserted that this road cost the enormous sum of more than *half a million* of dollars, and the committee who by unremitting personal attention carried out the work up to this day, have been abused for extravagance in expenditure. Mr. Williamson the late comptroller, gave the cost above stated of the road, with the expenses thereon up to his time of service; therefore it may be relied on. This much as regards road making, and to which I add at your request my view as regards the paving the streets of the city.

The same *principle as regards water* should be attended to in the first instance, in making the bed of the street, and especially as regards the introduction of water from the Croton Water Works, now so profusely running down the sides of the streets. It is absolutely necessary to keep the pavement, and under *stratum* dry; otherwise frost will heave up and produce inequalities. Already I see the "Russ," pavement has *settled unequally*, and indicates what may be anticipated after a few years of trial. Work the street fifteen years as the Third Avenue has been worn, and then I think it will be found necessary to take up the stones and renew the work, so as to shut out water. Relative to Broadway, the same rule above set forth, should be practiced in grading, having a dry bed for the street and dainage of water.

Then the foundation should be of broken stone, cemented together with *hydraulic lime*, mixed with sand in a state to set, and make a solid mass impervious to water; over this body at the sides should be placed deep curb stones, and beside them gutters of solid stones to carry off water. The pavement of Mr. Russ, should then be placed over the concrete, solid substance in the street and between the stones, liquid cement should be poured to prevent the introduction of water, and thus prevent heaving by frost.

In the city of Marseilles, I saw a costly pavement vastly superior to the above, and which will no doubt last as long as the "Appian way," it was all of cut stone, and bound together in squares by strong curb and gutter stones, with binders in the middle of the street, and crossing every twelve feet; thus making a work of such beauty and utility as to strike the traveller with surprise on examining it; but here, we must work with less expense, and I think if Broadway should be paved upon the above plan, it would prove of more advantage than any other yet projected, and no doubt Mr. Russ can carry out the matter in a way to ensure a durable pavement. There is one obstacle in the way of having Broadway always in a good state for carriages, not hitherto spoken of which is the laying down, taking up, and repairing of *gas* and *water pipes* in the streets; these should have been so laid as not to make it necessary to be continually taking up the pavement, digging out *sand* and filling up again; thereby keeping the noble thoroughfare always in a state of confusion. This is a matter of moment, and should claim not only the attention of the common council, but of the gas companies and the croton water department.

With high respect,
I am, your obed't servant,
CHAS. HENRY HALL.

P. S. The committee found at the Palisades, hard stone suitable for the upper strata of roads, in great quantity.

GUTTA PERCHA.

BY S. T. ARMSTRONG.

T. B. WAKEMAN, ESQ.,

Secretary of the American Institute.

Sir—Your favor of the 29th ultimo, requesting some facts relative to Gutta Percha, was duly received, and I will state to you such facts as have come to my knowledge from sources to be relied on, and from my own experience in the manufacture. *First*, I will give you the discoverer, and his acts relative to it. *Second*, its first introduction into London. *Third*, the first manufacturers and patentees in England, its progress, &c., in that country. *Fourthly*, its *first* introduction into the United States in the raw state for manufacturing purposes, the first manufacturer of Gutta Percha in the United States, &c.

The history of the discovery and introduction of this remarkable body cannot be more satisfactorily given than in the words of Doct. W. Montgomerie, through whom the Gutta Percha was first brought to the notice of the British public, and to whom the gold medal of the Society of Arts was justly awarded for the introduction of it. (Awarded in April, 1845.)

As far back as 1822, says Doct. Montgomerie, when I was on duty at Singapore, as assistant surgeon to the residency, I had obtained the name of it, while making inquiries relative to caoutchouc, of which there are several varieties, and some very fine specimens were brought me, and was told that there was another variety called Gutta Percha, and sometimes Gutta Tuban, which they said was harder than the specimens shown me, but none of it was brought to me at that time, and I lost sight of it, having returned to the Bengal Presidency.

But being again sent on duty to the Strait's Settlements, and while at Singapore in 1842, I on one occasion observed in the hands of a Malayan woodsman the handle of a parang, made of a substance

which appeared quite new to me. My curiosity was excited, and on enquiry found it was made of Gutta Percha, and that it could be moulded into any form by simply dipping into hot water.

On making some experiments with it, I at once discovered that if procurable in large quantities, it would become extensively useful, and even if only in small quantities, it would still be invaluable for many purposes. I therefore wrote to the medical board in Calcutta, strongly recommending its adoption for various surgical instruments, and sent specimens of the substance; at the same time specimens of the Gutta Percha were sent to the Asiatic Society of Bengal, and to the Society of Arts in London.

The tree from which the Gutta Percha is derived is, according to Sir William Hooker, one of the natural order Sapoteceæ, which comprehends those plants in which the leaves of the flower bud are imbricated, or overlap each other, and Sir W. Hooker gives it the name of Isowandra Gutta.

In the Journal of the Agricultural and Horticultural Society of India, will be found several communications on the Gutta Percha plant, and its milky juice, from the Rev. W. White, chaplain of Singapore, Mr. Wm. Griffiths, and Mr. J. G. Scott. From these we learn that this valuable tree is known for producing much esteemed fruits, good timber, useful gum, for affording a vegetable oil or butter; an ardent spirit and febrifuge medicine; the flowers in addition are used for food. Specimens of the wood collected at Singapore by Mr. Thomas Lobb, exhibit a *soft*, *fibrous* and spongy character. It is *pale colored*, and traversed by longitudinal receptacles or reservoirs, filled with the juice, forming ebony black lines. An analysis of the Gutta Percha will be found in the Calcutta Journal of Natural History, by Dr. Monat, and in the Edinburgh Philosophical Journal, another by Dr. Maclagan, from which it appears to consist of carbon, hydrogen, and a very small quantity of oxygen.

The Gutta Percha tree grows abundantly in the island of Singapore, and in the dense forests at the extremity of the Malayan peninsula, also in the island of Borneo. The tree attains a considerable size, even as large as 6 feet diameter; is plentiful in Saranak, and most probably all over the island of Borneo, and there is little doubt that it will be found in most of the forests of all those islands which range from Sumatra to the Phillipines, and probably on the main continent along the whole range of China to Malaya.

When Dr. Montgomerie made his enquiries in 1842, this substance was quite unknown to the people at Malacca, and to the natives of Sumatra, "although," he says, "I was inclined to suppose that the substance might have obtained its name from that island, the Malayan name for the Island of Sumatra being Puto Percha."

The tree producing the Gutta Percha is one of the largest found in these eastern forests; its wood is seldom used, but an edible concrete oil is procured from its fruit, and taken by the natives with their food.

The plan of obtaining the Gutta Percha from the tree was, as late as 1846, by felling the tree, stripping off the bark and the milky juice or sap gathered.

But in February, 1847, measures were taken by the East India and the London company, to prevail upon the Rajahs of the different provinces to introduce the plan of drawing the sap from the trees, in the same manner as the caoutchouc is drawn by the natives in Brazil, and we are informed that the Rajahs issued edicts throughout all their provinces to that effect, therefore the *tree* will be spared. Such is the history of the discovery of this most valuable article Gutta Percha.

Since the name of it is differently pronounced by the public, it appears desirable to give the origin of it, and its correct pronunciation. The name is a pure Malayan one, "Gutta," meaning the gum, or concrete juice of a plant, and Percha the particular tree from which this is procured. The *ch* is not pronounced hard like a *k*, but like the *ch* in the English name of the fish, Perch.

Gutta Percha was first introduced into London as an article of manufacture in 1845 or 6. The first experiment was made by Archibald Brooman, as an *artificial fuel*, but in the course of his experiments he discovered many valuable properties in it, and found it applicable to many useful purposes, and very soon applied for and obtained patents for numerous applications of the article. Charles Hancock, of London next takes it up and obtained letters patent. Charles Keen, Christopher Nickles and Henry Busby, of London and Dublin, are next found in the patent office with Gutta Percha.

In 1846 the Gutta Percha company was formed in London, with a capital of £500,000 sterling paid in, they sending their agents

throughout the whole Malayan coast to monopolize the raw material. The company purchased of the patentees all their rights in England, France, Belgium and the United States, (where patents had been applied for) by all the patentees, therefore the Gutta Percha business is at present monopolized by the London company in England. This company disposed of their patents in France to the house of Rattier & Cubal, by whom the business is extensively carried on.

In the month of June, 1846, S. T. Armstrong, of this city, received from one of the directors of the East India Company a small quantity of the raw material, with a request to make some experiments, and give him the result of his experiments. And at the same time suggesting the idea of visiting Europe on this business of Gutta Percha, however, being at the time engaged with some heavy government contracts, he was unable to leave for Europe until March, 1847, arrived in London in the month of April, and spent six months in England and on the continent, visiting all the Gutta Percha manufactories then in existence, and after much negotiation succeeded in purchasing the rights in the United States, applied for by the English patentees, and of visiting and perfecting himself in the art of manufacturing the different articles from Gutta Percha, and made arrangements with this company for a supply of the raw material. Mr. A. returned to this city in September following, and immediately made arrangements for the manufacture of articles from Gutta Percha. He imported the first lot of Gutta Percha for manufacturing purposes that was imported into the port of New-York, and is at the present time the only person who understands the art of manufacturing the article properly in the United States. He has now established in Water-street Brooklyn, a very large manufactory which is devoted entirely to Gutta Percha.

This mysterious substance can be manufactured into articles as *soft as silk*, and as *hard as marble*; it will take a polish equal to marble; it is made into machine belts, shoe soles, decorations of all kinds, round cords, book-binders' boards, military equipments of all kinds. &c., &c.

The supply will be limited for some time, excepting to those who have secured their supply, but after a few years the supply will be abundant.

Accompanying this short sketch you have a few samples of the many articles manufactured by the American Gutta Percha Company, office 139 William-street, N. Y.

S. W. JEWETT'S MERINO PRIZE SHEEP.

Sheep husbandry among the agriculturists of our extended country, is claiming more attention at this period, than in former times; but the spirit of improvement is far behind, what it ought and will be for years to come. There are thousands of flocks now in different portions of the United States, numbering from ten to five hundred that are no better, and of the two rather degenerated when compared with the original flocks of the country, as they stood thirty years ago.

There is no branch of more importance to the agricultural community, than the improvement of the vast herds of sheep, and none that can be effected in so short a period of time; every decided improvement not only benefits the farmer, but it adds to the wealth of the nation. Near our large market towns the improved breeds of mutton sheep, must be raised for the butcher; but as wool is to be one of the leading articles of commerce among the states, and for export, it is important that we improve a portion of our farms, which is so congenial to the growth of this domestic animal, to the finer breeds of our country.

The merinos, descendants of the fine Spanish breed of sheep, among all of the species stand at the head. It is to this strain of blood that we must depend upon for a basis, and for the improvements of our common flocks, where wool is the main object; the pure merinos are the most hardy and best adapted to our soil and climate, of any known species; no other race of sheep can be sustained in as good condition, and make so good returns as the merinos, they are better adapted to thrive on scanty keep, and range in larger herds than the other improved breeds, or what we term the "natives," of our country; these however, like the other breeds, thrive better in small flocks. I do not allow over about sixty to graze in summer, or fold in winter in one flock; although by proper attention two or three hundred merinos can be kept in one herd to good advantage.



S. B. JEWETT'S MERINO PRIZE SHEEP, Weybridge, Vt.

This article would be too lengthy if I were to give a full detail of my flock of sheep and their annual care; suffice it to say, that to be prepared for wintering, we lay in a proper stock of the finer grasses, cut in good season, and cured in the cock, in a greenish tender state. We have stationary boxes prepared under cover, and movable ones in the yards sufficient for feeding all the flocks in winter; we economise in shed room by constructing them with two stories or apartments for feeding under the same roof, allowing one flock to be fed in the story above the other; the flock below suffer no inconvenience from the urine above, when the floor between them is well littered at the commencement of winter; each flock can be shut in to protect them from storms, or for other convenient purposes.

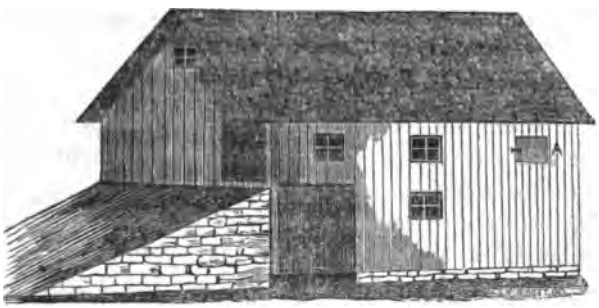
The best kind of feeding boxes that I have seen, are constructed of plank of about one foot in width, upon the upper edge of this plank, one and one fourth inch holes are bored eight inches from centre to centre, rounds or standards about 18 inches long are set in each hole, these are secured at the top by entering a cap from one to two inches thick, and four inches wide; when constructed in this manner, sheep never jump into them, nor can the stronger and more resolute crowd out the weaker.

One foddering of the poorest hay is selected each week, and brined by dissolving a pint and a half of salt in two gallons of water, and sprinkled upon the hay sufficient for a flock of sixty; this they devour greedily, and may be fed in the fairest days.

In summer we cast the salt before them on the ground, every week, which is preferable to keeping a supply before them, it is all times in troughs; without some attention every week, they become less tractable and more timid, forgetting the voice of the shepherd. In winter we feed our main flocks only twice each day, those that are hearty do as well when fed about one hour after sunrise, and at three o'clock in the afternoon.

There is great saving in time and hay, to feed them in boxes or racks sheltered from storms, and the cold; the extra growth of the fleece, and the saving of time and hay including other advantages, by shelter will pay for the sheds in two years; a shed 18 by 26 feet with 13 foot ports, will make room for two flocks of sixty in each including the space occupied for the feeding boxes. These sheds should be lighted and ventilated by slide windows upon each side.

I build some of these sheep barns of sufficient size, to contain a bay in one end; the shed which you see in perspective is of this class, 25 by 34 feet, twelve feet at one end is occupied for storing hay; the door represented at *a*, is the pitching hole. The basement is constructed with double doors of sufficient width, for backing in a cart or sled, to accommodate in loading the manure from below and above, by raising a plank in the floor. Some of these sheds are erected near our hay barns, where we can take the advantage of the rising ground for stock to enter the upper story, at others, the ground is raised at one end, as seen in the accompanying draft.



I am decidedly opposed to stowing hay as many do, in the lofts over cattle or sheep, unless a tight floor be laid over head. The effluvia and steam that arises from the animals and manure below, impregnates the hay above, and stock eat it with reluctance; hay keeps fresh and the sweetest in the solid mow.

It is of great importance that sheep walks should be dry at all seasons of the year, wet yards are very weakening and injurious.

Our weakest sheep and stock bucks, are fed a little grain through the winter, the main flock get no grain, except the breeding ones, these a few weeks previous to lambing, are fed corn or oats, or what is better, a mixture of carrots and sugar beets cut up and fed with two quarts of oil meal, to half a bushel of roots to each flock. The main portion of the lambs drop in May; but we allow some choice ewes to yean them one month earlier.

I have a few merino ewes which I imported from Lord Western's flock in 1836. In 1808, the Cortes of Spain tendered a present to the king (George III,) of five hundred ewes, to distribute among his subjects, and his lordship selected forty ewes out of the whole flock.

These Lord Western bred with the view of enlarging the carcass for mutton, as well as improving the wool; the quality of the mutton is said to be superior; weathers have dressed over 130 pounds, and their wool being highly valuable for long fine combing purposes.

I have about 60 ewes that are now dropping their lambs, got by the "French merinos," imported by John A. Taintor; these are the largest merinos I ever saw, and they are the most perfect model of a sheep; a flock of them may average in good condition, 200 pounds each. The three bucks that were with my ewes, are very fine wool, and it stands very thick upon the pelt; it is judged that the three will shear 45 pounds of cleansed wool at 15 months old. Half bloods will be enlarged in size, and must make a valuable cross upon the common sheep of our country.

I have over 400 pure blood merino ewes of one year old and upwards. For six years my stock buck "Fortune," has tupped about 200 each year; stock of his get have been widely disseminated throughout the Union. These sheep are of good symetry, very gentle and docile, of robust constitution, the wool is of good quality, and stands very thick all over the pelt, and are noted for shearing heavy fleeces.

Very respectfully,

S. W. JEWETT.

Weybridge, Vt. April 10, 1848.

MERINO SHEEP.*

BY MR. ANCRAM, of Michigan.

The following paper, though not strictly practical, will perhaps be read with interest, as is everything relative to this valuable race of sheep. It is a condensed translation from the French, in part, with my own researches and remarks.

Of the origin of the Spanish Merinos, and of the origin of the Rambouillet sheep, under the care of the French Government.

Some say that this race are natives of Spain, others that they came from Africa. Some even pretend to seek their origin in England; however this type is no where to be found in that country.

Martial was a Spaniard; he lived in the first age of our era, and in his time the wool of the Bœtica and Cantabria was very much esteemed at Rome. He says: "On the left bank of the Guadiana, of which Emerita Augusta was the capital, now Merida, was part of the Bœtica, and on the other part Julia Brega, capital of Cantabria in the Aquilar del Campo, towards the sources of the Ebro."

If we consider that these same places are still the centre of the habitation of the fine race of Leoneses; that a part of the Bœtica answers to that of Estremadura, where these flocks pass their winter, and that the Cantabria comprises the extremities of Leon and Old Castile, where they sojourn in summer, we find sufficient reason in all this to assign to this race no other country as the region where they originated, than where we find them at this day.

An importation of sheep has been cited by Columella from Africa, and some thought to find there the origin of the Merinos; but neither history nor tradition has transmitted anything of the pre-eminence of the African sheep over those of other countries; besides Columella was contemporary with Martial, and if the amelioration of the flocks were the effect of an African cross on the Spanish

* This article, by Mr. Ancram, of Michigan, was communicated to the American Institute by Daniel Mallory, Esq., of New-York.

sheep, it could not have extended itself so rapidly as to have reached the Bœtica (Columella lived at Cadex,) to the mountains of the Cantabria, and attract in so short a space of time the attention of the Romans.

The Cantabria had then little or no relation with the other provinces; the Cantabrians were never entirely subdued. Horace says; " Cantaber sera domitus catena." The regions they inhabited were at a great distance from the Bœtica. It must therefore be admitted that the importation spoken of by Columella was only an experiment tried at the southern extremity of Spain, and could not immediately extend its influence to the northern parts of Spain, and even to the Pyrenees. If you go back to more ancient times, you find the coast of the peninsula and some of the provinces of the interior occupied by the Phœnicians and the Carthaginians, people more of a trading than a pastoral character.

To the Carthaginians succeeded the Romans; it is known that the policy of these conquerors was to take from those they conquered what was precious and useful, rather than to add to the means of their prosperity. If the Romans had fixed their regards and attention to the amelioration of the flocks, if in the midst of their triumphs they had stopped to remark the immense benefits of this branch of industry, and the great wealth it produces to individuals and nations, would they not rather have enriched Italy with this blessing rather than the extremity of the Bœtica and the country of Cantabria.

It is in vain we search in the different ages at what period the pure race of Merinos producing fine wool was first introduced into Spain, and the place from whence they were imported. It is in vain that we interrogate history, tradition, travels and voyages to learn with certainty the original type of the pure race of Merinos. It is in vain that we search for them in any other country than Spain.

Some have thought that the Khorassan was the native country of this precious race, and that its introduction into Spain was due to the Arabs; but as we see above, the wool of the Bœtica and Cantabria were in estimation long time before Spain was subject to the sect of Mahomet, however, a fact which has been preserved in history destroys all the probability of this supposition. We learn that in the ninth era, the Caliphs of Persia and Africa sent to Charle-

magne a certain quantity of Spanish wool as a present worthy of being presented to a great prince from the extreme beauty and fineness of the wool.

Lastly they have advanced that the race of the Spanish sheep had been improved in quality by a considerable importation of sheep, which came into Spain as the marriage portion of a princess of the House of Lancaster married to an hereditary prince of Castile, son of Henry the Third; but this asseveration is the most improbable of all, considering the difference of form and characteristics between the English and Spanish sheep, particularly as to the quality of the wool.

In the midst of all these incertitudes let us have resort to some facts that may give some show of probability to the origin of the Merinos.

By following the historical and traditional facts, and taking in review the period from the year 69, in the reign of Galba, down to our own times, we find Spain has always been in possession of, and able to furnish to all Europe the finest wools. This commerce was immense in the 16th century, under Ferdinand and Isabella, and under Charles the Fifth. Spain had then eight millions of Merinos. This commerce flourished under the dominion of the Moors, and above all, under the Goths; lastly the Spanish wool was in high reputation under the first Emperors. Thus in proceeding from the cause to the effects, we are authorized to believe that the pastoral science was always known and practiced in these countries, and that the conservation of this race, the beauty of their forms and the fine quality of the wool, have always been kept in view without interruption.

If to these considerations we add all the advantages of the soil and climate that Spain affords for the raising of this kind of sheep; if we reflect it has not been more difficult for the Spaniards to keep their race of Merinos pure, than the Arabs of the desert their beautiful blood horses, it may be granted it is useless to search in any other country than Spain for the origin of the pure Merinos; and that this precious race originated in Spain. But whatever may be the objections that can be opposed to this opinion, and if any one insists that this race were imported, it still remains proved that neither in history nor tradition can any facts be found of this race in other countries, or the smallest trace of such sheep; and if this importation did really take place, it must remount to the earliest ages of which no fragments of history are extant, or have reached our

times; and that in no country but Spain can be found the original type that distinguish and characterize this bountiful gift of Providence to man, and that these sheep are a distinct race, even as regards their anatomical structure.

I now come to the second part, viz: the origin of the Rambouillet sheep under the care of French government.

This might appear of secondary interest, but for the civil wars and revolutions in Spain, and the consequent relaxation of those antique laws so essentially conservatory of the pure Merino; and but for the fact that the proprietors of some of the best flocks have caught the baneful mania, and crossed their flocks with the Saxony sheep. Perhaps now the best sheep are to be found in France in the Royal establishments, though a good judge no doubt would find plenty of good and pure bred sheep even in Spain.

No confidence can be placed but in those selected from the Royal flocks, or those derived from them. In Spain they are specially under the care of the King, though he never possessed a single head, and are called "trans humante," or travelling sheep, and are governed by a species of republican senate, with privileges and rights confirmed for many ages, with singular and antique laws, but essentially protective, and conservatory. Breeders think if they can prove their sheep came from Spain, that is sufficient; but they must prove they came from the Royal flock, "trans humante," or travelling sheep, to prove they are pure Merinos.

The first pure Merino sheep introduced into France was procured under the orders of Louis the XVIth, by Monsieur de Trudaine, in the year 1776; it consisted of 200 head; M. M. Daubenton and Buharnois obtained the greatest part of them.

The second was also demanded and obtained by Louis the XVIth, in 1786; it consisted of 367 head, and under the care of Mons. D'Angivilliers, the whole 367 head formed the foundation of the Rambouillet flocks.

The third was exacted by the directory, and by a secret article in the treaty of Basia in 1799 it consisted of 5,500 head brought into France at successive periods under the care of Mons. Gilbert Leporte and others. This importation has founded the seven Royal establishments of undoubted purity under the direction of the minister of the interior.

The fourth importation was of 600 head, under the orders of Napoleon in 1808, according to the order of the minister of the interior. 190 of these sheep and ten rams were placed at the National establishment of the *Landes, department des Landes.* This last was by far the most important, and were the finest sheep, selected from the most celebrated Cavagnes of M. M. Le Compte del Campo Alange for those of Negrette, the Marquis de Peralles, the Count de Montarco, the Marquis de Les Hasmozas, the Count de Portago and others. For the first time the French were permitted to choose the rams in the reserve, in the proportion of five rams to every 100 ewes (this is important when you hear gentlemen boasting of their sheep,) for the first time they procured permission to choose from the elite of the flocks.

Mons. Le Comte Del Campo Alange, proprietor of the fine Cavagne of Negrette, sent to Josephine, then Empress, 100 ewes and 6 rams, the flower of his flock. These were the best sheep ever introduced into France, and were delivered to the head shepherd at Malmaison. The mark of the Cavagne Negrette of Mons. Le Compte del Campo Alange, was burnt on the nose, N. E. The rams were marked with a U, like a horse shoe. These marks are all important, as by them it can be traced back whether sheep are of pure origin, as by the laws of Spain, anybody adopting the marks of any Cavagne, (which are all registered) would be prosecuted as for forgery.

The division Luco Negrette is one of the finest Cavagnes of the Compte del Campo Alange.

The flock of the Empress Josephnie, offers in itself the choice of the two Cavagnes, the most celebrated in Spain, those of Paular and Negrette.

The Paular of La Alcinda furnishes fleeces of the finest wool known. In the Negrette we find the nerve, the length, and all that distinguishes the Paular, notwithstanding the qualities of this flock. Malmaison being Josephine's private residence, at the sale of her effects, these beautiful sheep could not find purchasers at the lowest rate, and I fear they fell into hands that could not or did not appreciate them, for when in France in vain I made enquiries in every direction to get a sight of these sheep.

To show the folly of breeding sheep merely for obtaining only the very finest quality, without regard to quantity particularly in

this country, where climate and price for the very finest quality will never pay. The finest wool I ever saw in my life were from Merinos belonging to the Dutchess de Caylus, *chere amie*, of Louis XVIIIth. She had permission to cull the Rambouillet flock for the finest wool, and bred for no other purpose than to surpass everything for fineness hitherto produced, which she effected. I had an excellent opportunity of examining these sheep. I had them on a large table, and studied them in every way. The wool surpassed in fineness anything I ever saw, but the animals were weakly in constitution, small in carcass and in weight, and when sent to the annual show for the premium, they were conveyed in low carts with springs, and in very cold weather were actually clothed like horses. The study and inspection of these sheep afforded me considerable instruction.

I continue to keep up a large correspondence in this country and Europe, eagerly in search of every new fact that may be useful to us in practice. I have never read any work entire on sheep published in the United States. What I have given here is all my own, and from notes.

REMARKS

ON THE KIND OF SHEEP THAT ARE THE MOST PROFITABLE, AND THAT WE OUGHT TO EMPLOY.

BY MR. ANCRAM, of Michigan.

As the kind of sheep must be governed very much by the amount of capital employed, I shall not fix upon the exact breed in this paper, or the course that ought to be pursued.

Saxony Sheep.

These sheep are of no true breed of any kind, all that has been done, was to select always the finest wool without any reference to the blood of the animal; the result of this is, these animals produce a small quantity of the finest wool that can be produced; while in every other respect, they are inferior animals. These sheep have been almost universally crossed in the original Spanish Merino, which possessed fine substantial forms, well covered bodies, and beautiful and uniform fleeces. This cross has deteriorated the merinos of the United States, millions of dollars; these are the fashionable sheep, but I have long learned to despise popular opinion, and judge for myself; these sheep suit the manufacturers to work up the grade and pure merino wool; but it never can pay the man who raises them. They clip from 2½ to 3 lbs. of wool, which has sold for 50 cts., 60 cts., 68 cts, and I believe small lots higher; the animals are small, weak and with their open fleeces, ill adapted to our cold winters; they sell high when of the finest quality. As it is well known to breeders, that in breeding animals, they breed back not to the immediate parents, but possibly to the great grandam or sire it must follow; that crossing with these rams after several years, a flock is deteriorated instead of improved. This is what has actually happened in the United States, wool decreased in quantity, animals in size, and stamina, and nothing left but a little very fine wool, profitable only to the manufacturer who of course likes to vie with the English in soft superfine cloths, at the expense of the wool raiser. I have said this much, as these are the popular sheep; all have a dash

of Saxony blood, and many thousands are interested in crying them up, though people now see the error; I would never be satisfied with sheep giving only 3 lbs. of wool, these sheep should not suit us in any way, nor any cross of them, if it can be avoided.

Pure Merino Sheep

Many sheep in the United States are called so, that are not pure, I mean pure Merino sheep, Spanish sheep that have been kept so, or Rambouillet sheep. Unfortunately there are very few pure Merino sheep in the United States; I do not believe in the pedigrees given, all have been crossed with the Saxon blood, which has reduced the amount of the clip, injured the hardiness and thriftiness of the animal, spoiled the finest animals in the world; this is the sheep for us, wool, not mutton being our main object, still where the capital is sufficient, I would by no means confine myself exclusively to them, except almost entirely for rams. Such is my opinion of these sheep, that if I had capital of my own, I would not hesitate to go to France and bring over the finest animals I could procure, and in the largest quantities. The pure Merinos are the finest sheep in the world, in the United States they clip 4 to 4½, and some called pure, 5 pounds. In my numerous notes of Merinos in a long residence in France, they clip all round 6 lbs. each sheep, choice flocks; and there are very selected flocks that clip 9 lbs; this wool has sold for 50, 40, and 48 cts. per pound back-washed. As the manufacturers like the Saxony wool, they make a difference of 10 cts. and more between that and Merinos.

Bakewells.

These are fine sheep, come very early to the shambles, and suit those who live near large markets; they do not do well generally in the United States, are bad nurses, and would not suit us in a wool growing point of view.

Cotswold and Lincolnshire Sheep.

These are long wooled sheep; I recommend a flock of Cotswold sheep crossed with the finest Merino rams; their wool may pay, and the sheep more than the Merinos; combing wool will undoubtedly be of great value in the United States. Mr. Lawrence of Lowell, recommends them, and says, that the worsted business will be of immense importance in the United States. The Hon. Daniel Webster strongly recommends these sheep; Lord Western has succeeded in

England, in this cross with Merino rams. If we succeed, they will be highly valuable; if we do not make the wool so fine as we wish, it can do no harm; these are heavy, hardy, thrifty sheep, good nurses, tallowing well, and the wethers will fetch a good price for the butchers. They clip according to quality, from 8 to 10 lbs, and even more for sheep of coarse long wool; they thrive well in the United States, the wool did fetch 30 to 36 cts. per pound. These sheep will do, and if the Merino wool should rule low and long wool high, we can profit by the markets. This is better than being confined to one sort of sheep; the wethers can be sold to good purpose to the butcher, without looking to sell them; as rams, they will sell also; these may turn out the most profitable sheep of all.

South Downs.

The pure improved South Downs, are a most beautiful sheep, they make the best mutton in the world; the beauty of their forms will always sell them; I strongly recommend a flock of these, one to be kept pure, and as many ewes as can be, to cross with the pure Merino ram, they are a hardy active animal, good nurses, working industriously all day for their food, tallowing well, of medium size, clipping 4½ lbs of wool, half of the quality of pure Merinos. These sheep will sell well; they come early to maturity; their wool has sold for 40 cts. per pound. These sheep will pay well in wool, when crossed with Merino rams, and can be made to clip 5 lbs; these are sheep that suit everybody.

All these three races of sheep I recommend, are expensive; besides the cost of getting them here, and they say that people will not pay for fine and expensive sheep; my firm belief is the merinos of pure breed, will come to a great price; it must be so, they are so scarce. By crossing after the fifth generation, the wool will bear fine as the original pure buck; but the sheep themselves are of little value, except for their wool. It is to be observed at the end of the term, if you only cross with the Merino ram, you will have after a few years, wool as fine or nearly so, as the parent ram if properly conducted; but the sheep themselves are of no real value, and represent a small instead of a large capital. The Merinos crossed on heavy long wooled sheep as the Cotswolds, will not diminish the size of the animal; the cross shortens the staple, but then it thickens it, and the fleeces are doubled in value. I wish to correct by facts, a very erroneous opinion current in the east, and that particularly with writers on sheep, that our western herbage renders fine wool coarser; this is most erroneous, and here is the proof. An English gentleman settled in

Illinois, brought with him 27 years ago, a small flock of pure Spanish Merinos; I have not seen the sheep, but have large samples of their wool, and a full account of the flock from the gentleman himself; the wool is very fine, so fine that I would not wish to raise finer in this country; it competes with all my samples of Rambouillett, and pure Spanish wool; he always gets the highest price that imported Saxony wool of the finest quality commands, and the manufacturers say it wastes less, and yields more pure washed wool than any they buy, and the gentleman says that after 27 years of acclimation on the prairies, the wool is much finer than the original imported flock, and the fibre gains strength on this herbage, which renders it more valuable; he says it cost him one cent and a half per pound to transport his wool to Lowell, Mass., via. New Orleans. We in the United States, labor under no disadvantage from distance in raising wool, considering our other immense advantages, still I cannot recommend these sheep, because they only clip 2½ lbs. ewes backwashed, and 3 lbs. wethers; rams 4½. Our standard should be 5 lbs. backwashed, and we must go to the expense to obtain it; then we should make it 6 lbs; this is a high figure. To prove it may be got, I went on the following facts. An American gentleman imported three years ago, a small flock of Rambouillet Merinos; the whole flock sheared six pounds nine ounces, the rams a great deal more. Messrs. Grandmaison & Dumonts' flock, when I was in France, clipped, ewes from 6 to 7 lbs., rams 10 to 12 lbs; it will pay to buy the very best the United States affords. Last year an American gentleman took a tour into France, and saw rams that clipped 18 lbs. of wool; he purchased a buck 17 months old; this ram weighed 215 lbs. French weight, or 223 lbs. English; his fleece weighed 16 lbs. and was worth 40 cents in the United States: but this extraordinary ram was the best ram the breeder bred in ten years, out of a very select large flock; this American gentleman purchased him for $400, and did not think the terms unreasonable, nor at this price would the owner part with him, till he had served a certain number of his ewes, nor could any price tempt him to do so; here is a ram at $400, besides the cost and risk of his voyage, and you can buy sheep for one dollar, so you see how many shades there are. I do not recommend these high priced sheep, but you see what can be done; there is much to learn yet as to increasing quantity of wool; if the ram had been mine, and he was the best I had, the $400 should not have bought him. The royal flock of Rambouillet clip round, rams 12 to 16 pounds, ewes average from 8 to 10 lbs. of fine quality. I have spared neither trouble nor expense to procure information, and more is still to be got in regard to the best sheep; the

making the selection properly, will make a difference of 20 cts. in profits; my standard is five pounds and then six. The ultimate object is profit; without this all talk and knowledge is idle nonsense; this must be kept steadily in view, and economy also; handfulls make bushels, and ounces make pounds. It is not so easy a matter to rear the very best sheep; indeed to do the best, the task is a very difficult one; with such sheep, and pure Merinos, capital would be every year increasing, as well as revenue, unless in the end, they fall totally in value. All events point the other way, now they must sell greatly higher than any other sheep for their wonderful productions; I do not wish to presume to be a prophet, but my firm conviction is that the Merinos will mount high.

Cheviot Sheep.

I had not forgotten these sheep, but it is only lately that I learnt that there were any Cheviot sheep in the United States; indeed there are but few, and they are held at very high prices, so are all good sheep. The description I gave of what a good sheep ought to be, in the paper speaking of Mr. Sellar's plan, and recommending good sheep, beginning "strength of wethers," "fulness and breadth of chest, strength of loins," &c., was the true picture of the improved Cheviot sheep. If mutton was generally eaten in this country, and brought a good price, these would be most profitable and desirable sheep. These sheep are not a pure and distinct race, but have been improved for many years to what they now are. They weigh 18 to 26 lbs. avoirdupois, per quarter; fleece 4 to 4½ lbs. These sheep feed on the Scotch side of the Cheviot hills; crossed with the pure Merino ram, no doubt would form a very valuable cross; the wool would be increased in weight as well as fineness, and carcass not injured. The high price these Cheviots cost makes it necessary to weigh well the result, I mean the final result.

When a man is prejudiced he is generally very much so, and as these sheep still find favor in the United States, let us see if I committed any error. Rams continue to be imported. It appears from recent advices that Saxony has lost its former fame, and that which answers in all its qualities to "electoral wool," comes now from Prussian Silesia. Kutcheler, Hennersdorf, Gross, Sterilitz and Chrezelitz are the places where the first stock are raised, and to these places rush the wool growers of other countries from great distances at the beginning of every year. The prices for which some of the rams sell is enormous, $1,500 and $2,000 being given

for the best rams. The Prince Lichnowsky has the finest flock; he has 8,000 sheep and sells his surplus every year for 40,000 rix dollars. Thus you see an immense revenue is created when it is done on a large scale, and that Saxon sheep are lost in Saxony itself. What must be the effects of the Saxon blood in the United States, when the importations were made principally by speculators? I consider that the Saxton cross have created millions of loss to the United States.

Cashmere Goats.

It enters into my plan to keep a certain number of goats with each flock. The goat is a much more intelligent animal than the sheep, (though the sheep possesses higher intelligence, but it can neither be cultivated nor discovered till you have overcome their timidity) he is more attached to man; with a few well trained goats at command, a shepherd may lead his sheep where he pleases. Sheep always follow lead; sheep are ruined by being driven more than anything else, besides the goat gives a constant supply of milk, and as long as the cow, and is valuable to give an additional supply of milk to fine rams and ewes, and to those that the ewe cannot push forwards. Under these circumstances there might be cashmere goats in the flock. Mr. Ternaux and the French government were at considerable labor and cost in first finding and then procuring these goats. All are aware it is from their hair that the far famed much coveted cashmere shawls are made. Mr. Ternaux, a celebrated manufacturer in France, succeeded in making shawls that could not be distinguished from, and superior to the real cashmere, from the hair of cashmere goats bred in France. They have these goats at the Royal establishments in France, and no one at one time could obtain them, but by an order signed by the king, and they were only given to people of eminence and experienced agriculturists. When I was in France, Charles the Xth gave me two of them, male and female. They were beautiful creatures, and used to follow me all over the farm. I imagine they can be got now with less difficulty, and many private persons must have them. I do not attach any particular importance as to the profits, for they give but a small quantity each of that very fine hair of which they make the cashmere shawls, but this class is abundant, and may be an auxiliary, and if goats should be kept, perhaps a new manufacture might be introduced into the United States. In that case they would be highly profitable, and sell at very high prices. At all events their clip would be more valuable than any sheep.

There is a manufactory in Scotland of goat's hair. I am not acquainted with the minute particulars, but this I know, that what they make sells very high. Gentlemens' waistcoats made of goat's hair, sell very high, are everlasting to wear, and turn rain. The two goats I had were pure white; the buck at 3 or 4 years is a magnificent animal. I earnestly request this subject of the goat be taken into consideration.

I ask particular attention to what I am about to say as to the means of increasing the price of wool. The manufacturers do not give the grower a fair price for their wool; they do not give its value. I will just mention a circumstance. I procured in St. Louis a pound of fine handsac wool, such as is used often by ladies for tambour work; it was soft and fine, but not particularly fine; they charged me five dollars a pound for it, and have paid the same amount for similar wool in France, 1,000 per cent in advance. Surely this is worth serious consideration, when with a carding machine and spinning machine, which are not so costly, we might so enormously increase our profits.

Statistics of Wool and Wool growing in the United States.

As many may think, if the growing of wool in the United States was considerably extended, the price of wool might be depreciated below a remunerative price, the writer, who has devoted himself to the raising of sheep and fine wool, has thought that a few facts might be useful, as many persons might be deterred from investing funds under this idea. They can only be given as disjointed facts from which the inferences are positive.

The Spanish proverb says, wherever the foot of a sheep touches, the land is turned into gold. It is well known that the wool trade is the backbone and sinew of Great Britain. The prosperity of states is in proportion to the quantity of wool grown. England owes a great part of her prosperity to the woolen trade. The States in the United States which produce the most wool are the most prosperous, and produce the greatest quantity of wealth and money per individual, according to population. Even supposing that the wool cannot be sold in the United States, (which is far from correct) it can be sold in England and shipped there at a less cost than other wools sent to England, at 2 cents from here, or a little more, according to freights, as it pays no duty, or only a no minal duty.

The United States have only about thirty-four millions of sheep, and it is allowed by those conversant with the subject, that the clip in the United States is about 100 millions of pounds, allowing three lbs. of wool to each sheep; as the price of wool varies yearly, its value also must vary; 20 to 25 millions of dollars may however be called its average value. From a report in the House of Commons in England for 1845, Great Britain imported 65,779,534 lbs. of wool, besides possessing 50 million of sheep.

Sale of Wool and expectations of sale.

Great Britain alone importing 65,779,534 lbs. of wool annually, and France purchasing a considerable quantity, there is a chance of large sales for a long time to come for the United States, as the United States only raise three-fifths of what Great Britain alone imports, and it would be years before the United States could reach 50 millions of pounds, and in the meantime the consumption of wool in the United States is annually on the increase. The manufacturers in the woolen trade largely increasing yearly, there is a considerable manufacture of long wool for worsteds, &c. Since the tariff and duty on wool, the aggregate importation of foreign wool has decreased in a single year from 11½ million of pounds to less than five millions.

In 1844, from the returns laid before the House of Commons in England, the value of woollen manufactures exported from England amounted to 40 millions of dollars; of which $8,750,000 was exported to the United States. Among the goods exported to the United States were 8,947,619 lbs. of worsted yarn, all of which ought to be grown here.

These last facts must make every patriotic man wish that sheep and wool should be raised, and show field enough for the employment of any capital and exertion, particularly on our prairies; and is conclusive that wool raising must be a profitable business. It is calculated by evidence before the British House of Commons, that the freight and carriage of Spanish wool from Seville to England is estimated at about 3s. and 10d. per 25 lbs.

Transportation of Saxon wool, including the land and water carriage to Hamburgh, and freight from Hamburgh to England, is estimated at the least from 5d. to 6d. per lb., and in addition to that a duty of £3 per cwt. has been charged upon it for permission to pass through the Prussian states.

From Australasia, from which colony England draws a large amount of wool, it costs 3d. per lb. to bring it to the London market. I sent a sample of two wools I can grow here, and notwithstanding the difficulties any new staple labors under in the London market until known, (or rather the advantages they take) it was pronounced good clothing wool, and would fetch the highest price of that sort of wool, but it is not necessary to send the wool to England, nor would I recommend it, but I mention this to answer any one who may say, where shall we sell our wool?

The Middlesex mills at Lowell, according to the statement of Mr. Lawrence, consume annually one million of pounds. A firm at New Orleans advertised for a million of pounds of wool at one time for the French market. So soon as we can grow wool cheap enough for exportation, says an acute writer, we have a fine field. I believe now it pays in England a nominal duty of one cent a pound, on wool worth 24 cents per lb. and under, and two cents per lb. for wool costing over 24 cents; but now no doubt it will be duty free. The wool business in the United States is about one quarter of the cotton business.

In 1840 New-York had 5,118,777 sheep, Vermont in the same year 1,681,081, Ohio 2,209,401, yet Vermont produces more wool than Ohio.

Mr. Lawrence, of the Middlesex mills, says they use in these mills a million of pounds per annum, and adds, "We are very fastidious in the selection of our wools, both as regards the blood and condition, and in consequence are in the habit of giving prices which manufacturers think absurd; the wool is of the finest kind."

Let those who read and are willing to enter into my views, put all these facts together, draw just inferences from them, and it is a settled question that the time has come for raising wool, as a profitable and safe business for the investment of capital conducted by scientific men. Nothing requires more knowledge and constant and unremitting care, and if done on a large scale must make a fortune.

DUTCHER'S IMPROVEMENTS ON THE PLOW.

To T. B. Wakeman, Esq.,
Corresponding Secretary.

The history of the plow in America, for the last forty years, has been so indentified with that of my own, that in speaking of the plow, I shall often have to say something about myself. I have always considered the plow the most useful and necessary implement that man has anything to do with—for this reason, I have bestowed upon it a great amount of time, labor and money.

As early as the year 1806, when I was but a lad, I began to observe the difference in the constructions of the plow. At that time there were two kinds in use—one was called the Hog plow, which was said to be of Dutch origin, and another called the Bull plow, a Yankee invention. About this time I was learning the blacksmith trade, and had considerable to do with the plow, in constructing and making that part of it called the share. The Bull plow was the most esteemed—the other went out of use about the year 1809 or 1810. The cast plow, with wrought share, was known in and about Albany, and adjoining counties. It was said to be Mr. Peacock's patent. But I considered all that I saw awkward and complicated, not simple enough for general use, but such as they were I made and sold, like the other plow-makers. In the year 1818, I heard that there was a new plow got up by Jethro Wood, and as the plow was rather my hoby, I took the trouble of going some twenty miles or more to see it. But when I come to see and examine it, I found it to be complicated, weak and short-lived, yet it was different from those hitherto used—composed of three parts, a mouldboard, landside and share. The mouldboard was too short, and too full on the external surface, and otherwise not properly shaped. Its entering wedge or first part of the plough was two low, and did not turn the furrow upon the edge, in proportion to its entering the ground, in anything like quick speed, the furrows were broken and deranged. The landside was too narrow, long, and too weak, and did not protect the

front edge or part of the mouldboard on the landside, and was too straight on the bottom; the share was far from being right, it left the shin of the plow all unprotected. In April 1819, I planned a plow which I supposed better adapted to the work, as it afterwards proved itself to be. This plough I did not patent until 1822. Owing to bad management at Washington, I lost my first $30. Not having my specification at hand, I will describe my improvement at that time, April 15, 1819. The mouldboard was longer than any I had known; it was concave with a corresponding shape. My landside I made twice as wide as Wood's, 6 to 7 inches, and connected it to the mouldboard by two wrought iron bolts. My share, in which consisted my greatest improvements, was constructed with a projecting piece called a shin share so made as to supply with a new edge, the shin of the plow as well as the wing. By this improvement, which has been adopted by all plow makers, the plough was made more durable by one half. The making of the landside concave on the bottom, although only about half an inch from the point to the heel of the plow, was a very simple, but an important improvement. The mouldboard back of the wing of the share, did not touch the ground by half an inch. The two improvements are quite necessary in rough and stony lands. Wherever my plough was introduced it superceded Mr. Wood's. The result was a prosecution by Mr. W. for an infringement of his patent. He tried the second time, but was unsuccessful in both. About 1821, persons in different parts of the country got up plows. Among them were Mr. Tice of Washington county, Mr. Wright of Saratoga, Mr. Chamberling of Dutchess, and several others in different parts of the Union. They all laid aside theirs and adopted my improvements, I found it impossible to protect myself from these encroachments. Although my plow was made by all plow-makers, yet I did not consider it perfect. In 1828, I ascertained that my landside was not as durable as it ought to be. By not extending all the way outside to the share, it left part of the mouldboard exposed to wear, and could not be renewed without getting an entire new mouldboard. To remedy this I extended the landside outside of the mouldboard up to the share. Finding that the wrought standard I then used was not sufficiently strong and cheap, I, in 1823, extended the body of my cast mouldboard up to the beam, securing the beam to the body of the plow by a wrought bolt from the centre of the landside and mouldboard perpendicular through the casting on which the beam rested; and through the beam, securing it with nut and screw. These have also been generally adopted. One more improvement remained to be made. In my letter to the secretary of the American Institute, published in the

Journal of the Institute in 1837, I said that the mouldboard, beam and handles, of all the American plows were too short. I had been convinced of this six years before. About 1838, I adopted these alterations. The plow-makers all followed suit. Owing to the imperfection of the patent laws prior to 1836, I had little encouragement to patent my last improvements. One clause in the patent law of 1836, which declared that a patented article must not be on sale at the time of the issue of the patent, and that there must not be more than one year from the date of the improvement before the patent is taken out, deprived me of my rights to my improvements.

My large size plough that takes a furrow 7 inches deep by 14 wide, turns over 6¾ inches more at the top edge of the mouldboard than at the bottom. From all that I have discovered in twenty-five years of observation and experimenting, I have not found one straight line that I could recommend on the running part of the plow. Although a plow will run well in its perpendicular position, if the landside is straight, yet it will run better if it be even one eighth of an inch concave towards the land. In no case should it be rounding.

There are other points that should be kept in view, particularly the line of draft, comprised in the height of the horses' breast, and of the end of the beam and its length. I know plow makers who are unacquainted with this essential principle. When the landside is straight on the bottom from point to heel, the end of the beam must be one inch or more higher in order to make it enter, particularly in rough or hard land. This inch in the forward end of the beam places it thus much above the line of draught. In drawing the team pulls the beam down causing the plow to run on the point, and causing it to run unsteady, and, as farmers say, to root the ground. The half-inch concave on the bottom will enable the plow maker to fix the beam below the line of draught, which will make the plow run flat, and not rendering it liable to tip up behind when meeting with obstructions. This principle, as simple as it is, gave my plow a decided preference. The proper length of the beam is important and often overlooked. Although smooth, mellow soil requires some variation in the plow from that designed for hard and stony land, yet for land in general two or three inches in the beam makes great difference in the running, throwing the end out of the line of draught. The length that I have found as generally best for an half inch concave, is 2 feet 2 inches. I place my plow on a straight place, then measure the perpendicular from the point of the plow to the beam; then from this point 2 feet 2 inches to the end

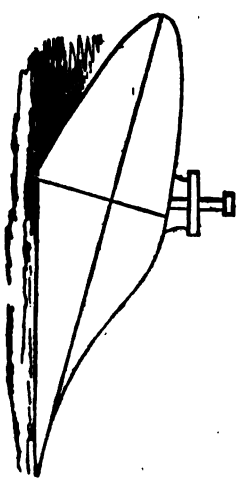
of the beam. For hard ground 2 feet, and for mellow soil 2 feet 4 inches are the extreme lengths.

Owing to the ignorance and prejudice of farmers, it has cost me more labor to introduce my plow than to make the improvements. These difficulties were aggravated by having my improvements pirated by almost every plow maker in the country. The province of Congress is to give protection to the real inventor, not to convey his improvements to another. Every farmer has a right to his own field, and its products; equally inalienable are the rights of inventors.

My long experience in the construction and great familiarity with the use of the plow, have led me to comprise the excellencies of the plow in seven essential points—materials, strength, draught, expense of first construction, workmanship, yearly expenses and performance. A deficiency in one of these may make the plow comparatively worthless.

Mr. Wood lays it down as a scientific principle, that the lines of draught of the mouldboard should be as shown in Fig. 1; that is, be-

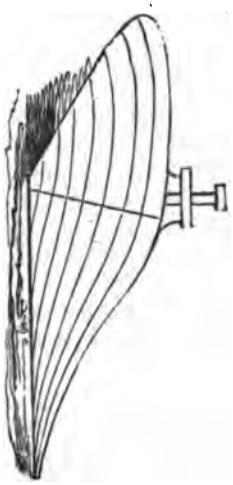
Fig. 1.



ginning at the point of the share, draw a straight line to the upper edge of the mouldboard behind—that this straight line should rest upon the external surface of the mouldboard all the way up to the upper edge of the mouldboard behind. This he says, is the line the

furrow follows. Now I assert that this is not in accordance with the natural operations of the furrow as it rises and turns from its horizontal to its perpendicular and inclined position. Practical experience has shown me that the surface of the mouldboard should be a curve as shown by a straight line drawn from the forward point on the lower side of the mouldboard diagonally to the upper end. This line will be one inch above the surface in the middle. Lines drawn at right angles to this line, will be one quarter of an inch above the surface. The furrow will follow the curved lines indicated in cut Fig. 2.

Fig. 2.



The time and money I have expended on the plow are equivalent to five thousand dollars. The advantages the public have derived can be estimated by hundreds of thousands, while my returns have not exceeded one thousand dollars. Plough makers have paid to Jethro Wood sums that should have come to me the real inventor of the improvements. This was done in consequence of improper laws passed by Congress in his favor.

In Mr. Jefferson's letter to Sir John Sinclair in 1798, you will find Mr. Wood's mouldboard described. In Ransom's history of agricultural implements, Johnson's encyclopedia of agriculture, and in the English journals since 1800, you will see that Robert Ransom invented a cast iron share as early as 1785. He also invented the process of chilling the point of the share. A farmer in Suffolk, England, made, in 1790, cast landsides. Mr. Newbold, of Orange

county in this state, made cast plows as early as 1790, and patented the invention in 1797. The patent, which I have seen, was signed by the elder John Adams. The casting of this plow went up through the beam like that of J. Wood's. Mr. Peter T. Curtenius of this city had cast iron plows for sale in 1800. They were of three pieces, mouldboard, landside and share.

In 1814 Mr. Wood obtained a patent, again in 1819, and by special act of Congress, procured a renewal of 14 years, making *thirty-three* years in all. He now seeks another renewal!

J. DUTCHER.

New-York, Jan. 1, 1848.

ON THE CULTIVATION OF THE TEA PLANT

IN THE UNITED STATES.

BY JUNIUS SMITH, ESQ., MEMBER OF THE AMERICAN INSTITUTE.

NO. I.

Introduction—Description of the Tea Plant—Black and Green Tea from the same Plant—Resemblance to the Grape Vine—Torrid Zone supposed indispensable to the culture of the Tea Plant—Hon. Henry Clay's mistake—Climate, Latitude, Temperature, Soil, Location and Productions of the eighteen Chinese Tea Growing Provinces considered—Districts more particularly appropriated to the cultivation of Tea—Tea cultivated throughout China—Character of the soil adapted to the cultivation of Tea—Effects of Manure upon Plants—Tea Plant indigenous to the Temperate Zone—United States produces all the plants which grow in the Temperate Zone, therefore will produce the Tea Plant.

Introduction—Description of the Tea Plant.

The investigation of any subject which has a practical bearing upon the agricultural interests of our country, merits the attention, in a particular manner, of those engaged in the pursuits of husbandry. No subject relating to agriculture, with which I am acquainted, can be brought before the public mind, more novel in itself, or more intimately associated with our daily enjoyments and permanent welfare, than the cultivation of the Tea Plant. Great efforts have been made, and large sums of money expended, in exploring unknown, distant, trackless wilds, without the slightest attempt to explore the capabilities of lands lying at our door, and offering to the hand of industry, greater reward than distant possessions can promise. It is by no means certain that the extension of territory will be more beneficial to our country than the extension of cultivation over lands already in possession. The former invites our surplus population abroad; the latter gives them full employment at home.

Hitherto, no friendly fostering hand has been raised in behalf of the Tea Plant, but content in the enjoyment of the purchased fruit, we have repelled the cultivation from our shores, until we have come to a conclusion that it cannot be cultivated at all.

Whilst we invite public attention to the enquiry, and the co-operation of southern and western planters and farmers in correcting our errors and more fully developing the subject, we beg to apprize the surface readers of our day, that it is not one calculated to amuse the imagination, but rather to instruct the understanding and enlarge the sphere of practical husbandry.

The Tea Plant is a hardy evergreen. It grows ordinarily from four to six feet in height, and spreads in numerous branches from the bottom, forming a thick bushy top like a currant bush, but resembling more closely perhaps, the myrtle. The shrub is covered in its season with a great number of white flowers with yellow stamens, like a wild rose, and is slightly odoriferous. When the flowers fall off a round pod remains, in which, when ripe, there is a round black seed about the size of a buckshot. The leaves are of bright green, serrated, and run to a sharp point life the leaf of a peach tree.* It is not our intention to discuss the often mooted question, whether there are two distinct species of Tea Plants, Green and Black, or whether there be but one species producing both Black and Green Tea. Learned naturalists, after exhausting their strength, have left the matter where they found it.

Botanically considered the Tea Plant is undoubtedly but one species, and yet produces both green and black Tea, just as a grape vine produces white and black fruit, but is still a grape vine; or an apple tree produces red and green fruit, but is still an apple tree. Soil, climate, cultivation, manure, mode of curing, time of collecting the bud and the leaf, produce a decided difference in the leaf of the same plant, and in the quality of the Tea.

In many respects the Tea Plant resembles the grape vine more than any other plant. In France and Europe generally, it is well known that the grape vine of the same species produces very different qualities of wine, even from vineyards lying contiguous. The difference from the above-mentioned circumstances, is not easily accounted for with precision. It is precisely the same with the Tea

* See McCartney's Embassy by Sir Geo. Staunton. Foreign Missionary Magazine, New-York, Aug., 1847. McCulloch's Commercial Dictionary.

Plant. The exact quality and characteristic flavor cannot be known until the leaf is gathered, converted into Tea, and the quality tested, and yet it is the same plant. Hence the almost numberless names given to Chinese Teas to designate their particular growth and quality. The best wines are produced in particular latitudes, particular soils, and particular locations. It is precisely the same with regard to Tea Plants grown from the same collection of seed, in contiguous gardens, set in different sections of the same district, producing various qualities of Tea. We find the best and choicest flavored Tea produced in China, where we should least expect it, in the vicinity of Peking, N. Latitude 40°, in a line parallel with Philadelphia. The analogy, however, between the grape vine and the Tea Plant is not sustained in one important particular. A grape vine which produces white, does not produce black grapes; nor does a vine which produces black, produce white grapes. However various the quality of the wine the grape may produce, it retains its distinctive color. The Tea Plant produces different qualities of Tea and so far resembles the grape vine, but it seems well substantiated that the same plant produces both black and green Tea, and so far differs from the grape vine. Great attention and sound discretion therefore must be exercised in the selection of the most advantageous location for a Tea Garden or Plantation, which will more fully appear in the sequel.

We are quite aware that a general opinion prevails in this country that an equatorial climate is indispensable to the successful cultivation of the Tea Plant. Nothing, we apprehend, can be more erroneous, more at variance with experience, nor more entirely fabulous than such an opinion.

Even the celebrated statesman of Kentucky, in his memorable address, delivered in Lexington, 13th Nov., 1847, affirms "that our country comprehends the greatest variety of rich soils capable of almost all the productions of the earth, excepting Tea, Coffee and the Spices." He evidently had not considered the subject, so far as regards the growth of Tea, with his usual sagacity; but gathering into one luminous view the amplitude and capacity of the Federal Union, for agricultural purposes, gave a bold off hand expression to his vigorous intellect and comprehensive mind without pausing to consider the details which might have given a different direction to his conclusion. Nevertheless, we have grouped his own romantic

state among the Tea growing districts of our country, and anticipate the time when the celestial evergreen will wave over his plantations, and its fragrant leaf gladden his festivities and cheer his heart.

In considering the climate, latitude, temperature, and soil best adapted to the growth of the Tea Plant, our attention is naturally directed to the Tea growing districts of China. Our object will be sufficiently gained if we confine our enquiry to the eighteen provinces into which China proper is divided, all, to a greater or less extent, Tea growing districts. This, examination, especially when we come to consider the parallels of latitude in our own country, will probably show most satisfactorily and conclusively the error of popular opinion.

China proper, exclusive of its dependencies upon the Northwest and South, comprehends a space situated between 20° and 41° N. Lat., and from 101° to 122° East Longitude.

Chihli is the most northern of the eighteen provinces. The capital, Peking, is in Lat. 40°, about 120 miles from Tungku, on the coast of Pachele Gulf, and is situated in the northern part of this province.

The climate of this province is colder than it is in the United States in the same parallel of latitude. In Peking, the thermometer stands during the night in winter months 18 to 20° of Fahrenheit, and during the day is below freezing point. It is seldom so cold in this country south of 40° F. The summers are warmer than the same parallel in the United States. The temperature generally from 75 to 90° F., sometimes 95 to 105°. But notwithstanding the rigor of winter, the Tea Plant cultivated in the district contiguous to Peking, produces the finest, most fragrant, and most expensive tea in China. It is from this province that the Peking Tea Company collects the richest and greatest variety of Tea for exportation to Russia and other countries. It is from these gardens that the Emperor's household and the great officers of the court are supplied. Beyond the boundaries of China proper on the north, the Tea Plant is cultivated as high as 45° N. Lat., of an inferior quality it is true, as the high latitudes will not admit, from the length of winter and shortness of summer, of so early and so vigorous a growth, and of course of so delicate a leaf, as more temperate latitudes. It is mani-

fest therefore that the growth of the plant does not depend upon the temperature of the climate.

The soil of the eastern part of this province, extending to the sea coast, is sandy, poor, just sustaining a miserably destitute population. The middle and northern part is a level plain with richer and more productive soils. The western, broken and hilly, and adapted to agricultural purposes. Productions: Tea, Millet, Wheat pulse, and varieties of Fruit, and some Rice. In Lat. parallel with Madrid, Philadelphia and Delaware.

2. Proceeding south, we come to the adjoining province of Shantung, a maratime province stretching along the coast of the Yellow Sea.

The face of the country is diversified. The eastern part, hilly and mountainous; the western, level and undulating.

The temperature of this province, is cold in winter and hot in summer. Snow falls and sharp frosts ensue during the winter months, and even the Yellow River, the southern boundary of this province, is often obstructed with ice. Ice houses are far more common than in this country, though the ice is generally used to preserve fish rather than as a summer luxury for the table.

The productions of this province are Tea, Rice, Millet, Maize, Fruits, &c. Lat. about 34 to 37° N. Lying parallel with Gibraltar, and northern parts of North and South Carolina.

3. Shansi is a northern frontier province, west of Chihli, and about the same latitude.

Its surface is mountainous, hilly, rugged, its winter cold, and temperature freezing. Productions: Grain, Millet, Wheat, Vegetables, Fruit; we have no reliable accounts respecting the production of Tea, excepting the general one that it grows in all the provinces Lat. 35 to 40°. Parallel with Virginia.

4. The province of Honan, south of the Yellow River, is situated near the centre of the provinces. The face of the country is generally a rich plain; but the southwestern part of the province is intersected with hills and corresponding valleys.

The temperature, cold in winter, both frost and ice. Productions: Tea, Silk, Cotton, Hemp, Flax, &c.

Lat. 32 to 35. Parallel: North Carolina, South Carolina, Georgia, Alabama, and Mississippi.

5. We now come, as we proceed southerly, to the maritime and central provinces of China, forming the finest and most productive agricultural districts of the Empire, and producing the greatest abundance of Tea. From these provinces the bulk of the Tea exported, which by the way is but a very small proportion of the quantity grown, is principally derived, and from the latitude we can easily perceive the corresponding districts of our own country.

Kiang-nan,	Latitude	30 to 35.
Che Kiang,	"	29 to 30.
Kiang See,	"	24 to 30.
Fokian,	"	27 to 28.
Ilamur,	"	25 to 30.
Kwangsi,	"	22 to 25.
Kiang See,	"	30 to 35.
Kwangtung,	"	22 to 25.

All these provinces are intersected by mountains and hills, numberless rivers wind their course from the mountains and high lands to the ocean, and the soil is as diversified as the surface.

The productions common to all, are Tea, Cotton, Silk, Rice, Grain, Tobacco, and all kinds of vegetables and fruits grown in temperate climates, &c. Indian corn is the production of every State in the Union, but in some it grows more luxuriantly and is cultivated more generally than in others. It is the same with regard to cultivation of Tea in China. It covers the Empire and yet is more productive and more generally cultivated in some districts than in others.

Upon the authority of Dr. Abel, the district more particularly appriated than any other to the cultivation of the Green Tea, lies at the base of a ridge of mountains which divides the provinces of the Che Kiang and Kiang-nan, N. Lat. 30 to 32°. The Black Tea District in the province of Fokian, is situated on the south-eastern declivity of a ridge of mountains dividing the provinces of Fokian from Kiang See, Lat. 25 to 28. Very little Tea is produced in the neighborhood of Canton, or south of that city, Lat. 23° 8′.

Experience proves that the solar heats of equatorial latitudes are incompatible with the vigorous and productive growth of the Tea

Plant, and that the subdued climate of the temperate zone is congenial to its nature and its native home.

Soil and Location.

Having shown that the Tea Plant flourishes in its greatest strength between the 20th and 40th° of Lat., and contrary to popular opinion in this country, is proof against the severe frosts, snow storms, and all the stern severities of winter, we proceed to consider the soil and location best adapted to the production of Tea.

Writers, who have visited the various Tea Gardens in China, agree in the fact that a hilly, if not a mountainous country is to be chosen for Tea Plantations, rather than low, flat, alluvial, wet bottom lands, however rich and productive they may be in other kinds of produce.

The plantations in China are generally located in the lower and more fertile sides of hills with a southern aspect, extending from 5 to 600 feet above the plain down in the valley, avoiding springy and wet soils, and of course a clayey sub-soil. All that is required in this respect is that the soil should be sufficiently retentive of moisture to nourish the plant. A free generous soil, too high upon the slope to allow the plants to be injured by springs of water from the sides of the hills, and too low to expose them to the violence of storms.* The easterly, are the only winds injurious to the plant, and it is of no avail attempting to cultivate on an easterly exposure.

Mr. Gordon associated with the Assam Tea Company in India, visited the Tea Hills at Toa-be in 1834, and affirms, that the soil of those gardens was little more than sand and yet required no manure. Mr. Fountain, on the contrary, who visited the Tea Gardens in China, affirms, that the plant requires a rich and well cultivated soil.

Being myself a practical amateur horticultruist, I think there cannot be any difficulty in deciding between the two. I have always found that plants of every description require something to live upon; and as a general rule, the better they are fed the more luxuriantly they grow. But when we consider what a heavy and continued draft is made upon the Tea Plant by constantly plucking, not only its leaves, but its early buds; I think there can be no doubt but that

* Fountain. Gordon's Journey to the Tea Hills at Toa-be. Chinese Repository, Vol. 4, .835-6.

its healthful and vigorous growth depends, in a great measure, upon suitable and abundant sustenance; and that its very life is at stake, and liable to be prematurely sacrificed by starvation. Therefore I would recommend cultivating the Tea Garden as every Garden should be cultivated, by ploughing, digging, hoeing and manuring, when the soil requires it, and keeping it clear from weeds, clean, and in good heart. Nothing is ever lost by good husbandry, nothing gained by bad. No cultivator can be deluded into the expectation of reaping a crop from a mere sand bank; the idea is preposterous. In the Tea districts of China, every cottager has his Tea Garden, from one to five or six acres, the produce of which supplies the wants of his family, and the surplus is sold to the Tea dealers, who go about the country to purchase and prepare it, for home and foreign markets. A gravelly sub-soil covered with just that coating of rich mould, which gives growth and beauty to our mountain foliage, and abundant crops to our spreading valleys, will unquestionably naturalize the Tea Plant, and invest it with all its native grace and excellence.

The quality and flavor of the Tea Leaf is not only affected by the soil, climate and location, but by the character and quality of the manure used in cultivation. From the general tenor and drift of the agricultural reports published in this country, I am constrained to believe that our farmers and horticulturists have paid more attention, indeed their chief attention, in their experiments upon manures, to the *quantity* rather than to the *quality* of the produce grown.

In this way it may happen, and I am certain it does happen, that the inferior quality of the larger bulk is oftener less valuable than a smaller bulk of superior quality, and thus if I may indulge an Hibernianism, the success of the experiment is a failure. This is in perfect accordance with the fact observable in the growth of other plants. As this point is curious and of great importance, and of daily application to the husbandman, I beg to call his particular attention to it, and to illustrate it by a single example, drawn from my own experience, and for the correctness of which I can vouch. Take the article of celery which I have been in the habit of cultivating for my own table for nearly half a century, and which I presume is familiar to you all. This vegetable depends entirely for its flavor upon the character and quality of the manure used in its cultivation, and not at all upon the kind of soil contignous. I am quite certain that I can grow celery twice the size of any I have seen in this country, and yet I am equally certain that it would not be fit to place upon any gentleman's table.

The great strength of the manure, teeming with ammonia, and offensive to the senses, necessary to produce celery of a giant size, communicates a strong offensive fibrous smellage character to the plant which destroys its delicacy, and renders it fit only for the manure yard. If the manure before it is put into the trenches be thoroughly cured, the heat and ammonia expelled by age, and the whole mixed with rich mould and chloride of lime, the composition is sweetened, agrees with the plant, and produces a rich, tender, sweet, stocky, and most delicious head of celery. The same principle is applicable to varieties of potatoes. But I cannot pursue this enquiry further at the present moment, but content myself with having brought it before you and commended it to your practical consideration. Undoubtedly the fruits of the field are directly affected by the peculiar properties of the aliment upon which the plant feeds, and that a superior flavor may be given to most of our fruits, or they may be divested of it, by the appropriate character of the manure and its judicious application by the farmer.

Chemistry has done much for practical husbandry, but personal experience and close observation are, after all, the most certain and instructive laboratory.

I see no reason why the quantity, quality, and flavor of the Tea Leaf may not be affected in the same way as other plants, by the process of manuring. It is quite possible that by very high manuring we may obtain a greater weight of Tea Leaves of inferior quality, than by a more restricted system, and yet the superior quality and flavor of a smaller quantity from the same number of plants, may overbalance in value the larger quantity.

That our soil will produce the Tea Plant, a native of temperate latitudes, is inferred from the fact that it produces every other species of vegetable indigenous to the temperate zone. It would be an extraordinary thing if the Tea Plant were the only one it will not produce; an absolute phenomenon; nay, well nigh a miracle! seeing it would amount to a suspension and contravention of the established laws of nature. We must therefore maintain, until we see far better evidence, to the contrary, than can be found in popular opinion, that our soil will produce everything that grows in the temperate latitudes of this world, without one single exception.

If the location of Tea Plantations requires a mountainous district undulating hills, picturesque glades, sloping lawns, luxurious valleys,

northern barriers, eastern bulwarks, and the warm beatings of a southern sun; a munificent Providence, foreseeing all these requirements, has bountifully provided and entrusted them to the hardy, vigorous, industrious husbandman of our country. God has left him nothing to ask, he is only required to act.

NO. III.

Cultivation simple and easy—Manner of planting the seed—Cultivation of the plant—Picking the leaves—Labor of women and children—Cost of picking—No improvement attempted by the Chinese—Mode of curing tea in China by fireing and sun drying—Mode proposed in the United States, by sun drying only—Great reduction of labor and expense—Tea better cured—Superior quality of Tea sent from China to Russia—Its cause—Age injurious to the quality of Tea—Dyeing Teas in China—Number of plants upon an acre—Product of the plant—Total expense of gathering and curing Tea.

1. PLANTING.—No plant is more simple in its cultivation, and none requires less skill and attention than the Tea Plant; any one who can cultivate a cabbage can cultivate the Tea Plant. The Tea Seed as has been already remarked, is about the size of a buck-shot. In China it is sown so soon as it ripens in October and November. The hole, like a hill of corn, is three or four inches deep and several seeds are thrown into one hole, as the greater part of the whole do not vegetate at all.* The sprouts appear the second or third month after the seed is planted, and as they grow, the earth is gathered or hoed up a little around the root. These plantings are in seedling beds of good, though not rich soil, and planted thick. When sufficiently grown for transplanting, they are set in rows, four feet apart each way, for permanent growth, so that an acre of ground, 400 feet by about 109, will require 2500 plants to stock it fully. The plant is not generally manured, nor is it subject to irrigation, a branch of cultivation so common and expensive among Oriental nations. Nor would it be practicable to adopt the system of irrigation generally in the Tea Plantations of China, seeing they are often situated upon the sides of hills and mountains; formed into hedges, and in fact placed just where a footing can be found for their support.

I do not mean to be understood as asserting that the Tea Plant is *never irrigated*, for I am aware that in some districts it is, but that generally it does not require the application of that labor.

*Foreign Missionary Magazine. Sir George Staunton's Embassy.—Fountain.

The plantation now requires no more care than any ordinary fruit orchard, for three years, when the plant has acquired sufficient growth and the leaves sufficient maturity to pluck for use. The Plant, however, continues to improve for seven years, when it comes to full maturity. But the plant continues to thrive until it attains the age of from ten to twenty years. This is the Chinese mode of planting. But my own method is to plant the seeds in drills about four inches apart, in rows fifteen inches apart, which allows sufficient room for hoeing and cleaning between the rows. Whatever blanks may be discovered in the rows by the failure of the seed to vegetate, may easily be supplied from the young shoots, and the plants thus stand all in regular compact rows, ready for final transplantation. The lands in China, farmed out in small lots among an exceedingly dense population, are so valuable, that the occupants often cultivate green vegetables between the rows of Tea Plants, and thus extend their crops. Necessity may compel, and perhaps justify, such an unwise mode of cultivation. But unless the land is very highly manured, nothing is gained, but labor lost, what one plant gains, the other loses. Both are partially starved, neither fully fed.

2. Cultivation.—There cannot be a greater mistake in the art of cultivation, than that of huddling plants one upon another. It is like setting one potatoe before two Irishmen; there is not enough for both, and being equally hungry, they are very likely to quarrel for possession. The roots and fibres of plants are far more numerous, and extend three or four times the distance that is generally imagined, and they are just as sensitive to short commons, as the farmer himself. Let them have elbow-room and plenty of food, and it must be a bad season, if they do not flourish.

3. Gathering.—There are three pickings of leaves, sometimes four, during the season. The husbandman will perceive when the leaves are ready for gathering. In the district of Chekieng, near Ningpo, Lat. 31°, the first crop of leaves is gathered about the middle of April, varying, of course, according to location, and the early or late appearance of spring. This gathering consists of the young *leaf-buds* just as they begin to unfold, and makes the finest quality of Tea. They call it China, Young Hyson or Gun Powder, and it is held in the highest estimation by the natives. In two or three weeks from the first picking, or early in May, the shrubs are again covered with fresh leaves, and are ready for a second gathering. This is the most important. The leaves are more full grown, more abundant, and less labor is bestowed in the gathering. The leaves

do not require to be plucked singly like the buds, but they are rather stripped off the branches. The third and generally the last gathering, takes place so soon as the new leaves are formed, and produces a coarser, and inferior kind of Tea, used profusely by the laboring class of people. It will be perceived therefore, that the same plant produces annually three or four different qualities of Tea, and of course of different value.

The labor of gathering the leaves is performed chiefly by women and children. They wear a white cloth over their heads to protect them from the heat of the sun. Each person carries a little stool with one sharp foot, which is stuck into the ground and serves as a seat; also a small round basket which holds about a peck and a half.* Thus equipped, you will perceive the labor is light and the ployment agreeable; indeed it furnishes a suitable occupation at a suitable season of the year, for the aged matron, who can sit upon a stool and pick a leaf, or the infant of tender years who cannot be overtasked by so simple and light employment, or the lady of high degree who may prefer the gentle exercise and fresh breezes of the morning air, to the close confinement of domestic duties.

It is considered a good day's work, to gather from twenty-five to fifty pounds of green leaves. The women and children, are paid about one-third of a cent, for gathering a pound of green leaves, or ten cents for thirty pounds. Five pounds of green leaves, produce one pound of dry tea.

CURING.—Although I design to avail myself of the Chinese mode of cultivation and of curing teas, so far as it is applicable to our country, yet I shall neither adopt myself, nor recommend to others any particular practice *because it is Chinese.* More especially do I consider this course expedient, when I consider that this singular people are not distinguished for independence of thought, or intellectual pre-eminence, but have continued to follow in the footsteps of their ancestors, from generation to generation, without making the slightest improvement in their government, laws, literature, agriculture, commerce, and religion. An absurdity once established, is an unmodified absurdity forever.

I am aware that we have much to learn from our own experience, but there are some philosophical principles which lie within the

*Chinese Repository. Foreign Missionary Magazine. William's Middle Kingdom of the Chinese Empire.

reach of common sense, and which no Chinese apathy can obscure, or obstinacy change. Under the head of curing Tea, I purpose pointing out some particulars which I apprehend, although differing widely from Chinese customs, will prove, in a view of extended cultivation, of vast consequence to the agricultural interests of our country.

There are two methods of performing the operation of curing Teas practiced in China. One for home consumption, the other for exportation, although both methods are sometimes used reciprocally. I will explain both, and show that our imported Tea can never, by any possibility, equal in richness of flavor, the Tea consumed in China or exported by land to Russia; and at the same time point out a decided improvement which may be introduced in this country, resulting in reduction of labor and expense, and a greater perfection of the Tea.

So soon as the Green Tea leaves are plucked, they are spread in the shaded sun, for a short time and suffered to wither. When they begin to have a light withered appearance, they are taken into the house and placed on a frame work to cool for half an hour. They are then put into small baskets, and workmen are employed to soften the leaves still more by clapping them gently between their hands for a few minutes. They are then put on the frames again for about half an hour, until the leaves become to the touch like soft leather. Next comes the process of *Fireing*. The leaves are put into thin, shallow, round cast-iron pans, which are fixed in a circular mud or brick fire-place in such a manner that the flame of the fire cannot ascend to annoy the operator. The pans are well heated with straw or any combustible matter, to a degree less than scorching heat. About two pounds of the leaves are put into each pan and spread so that the leaves may receive the same degree of heat. To prevent burning, the leaves are constantly turned with the hand or a bamboo brush. When the leaves become sufficiently hot to inconvenience the hand, they are taken out quickly, and delivered to another person with a close basket to receive them. After the pans have been charged three or four times in this manner, a bucket of cold water is thrown into the pans, and a soft brick bat used with a broom to scour them out. The water is thrown out of the pans by the broom upon one side without disturbing the pans.

The leaves all hot as they come from the pans and baskets, are spread on a bamboo table with a narrow rim upon its back to prevent the baskets from slipping off when pushed against it. About two pounds of hot leaves are divided into two or three parts, and distributed to as many workmen who stand round the table with the leaves before them. The leaves are collected by them with their hands into a ball and propelled along the table, the right hand gently pressing the ball down to give it consistency and to express the juice from the leaves. The art consists in giving the ball a circular motion, and permitting it to turn round, in and under the hand, two or three whole evolutions, before the arms are extended at full length, and drawing the ball quickly back without leaving a leaf behind. This operation is continued from five to ten minutes. The ball of Tea is occasionally opened out with the fingers, and raised as high as the face, and let fall again, to separate the leaves.*

The leaves now undergo a second operation of fireing in a manner similar to the first; and then a second rolling; after which, they are put into the drying baskets, and spread on a sieve which is in the centre of the basket, and the whole placed over a charcoal fire. This is carefully regulated, the charcoal judiciously selected, and the fire fanned when lighted until it gets into a fine glare, and every particle of smoke is expelled. When the leaves are put into the drying basket, they are gently separated by lifting them up with the hands and allowing them to drop. They are placed four or five inches deep upon the sieve, having a passage in the centre, for the heated air to pass through; this is the third and generally the last process of fireing. The Tea is now assorted, prepared for sale, and disposed of to the Tea merchants.

The first gathering, you will remember, was of the *Tea buds* just upon their opening into leaf. All that quality is gathered bud by bud, rolled separately by the fingers, and forms that small round Tea, called Gun Powder. The succeeding crops, go through a less exact and elaborate manipulation.

This tedious process of fireing is undoubtedly necessary in China, when Teas are cured for exportation to Europe or the United States. The length of the voyage, renders the entire exclusion of moisture, and its consequent exposure to vegetable heat and incipient decomposition, indispensable. But the same reason does not rule, in ref-

* Dr. Ure's Dictionary of Arts and Manufactures. Chinese Repository, Vol. 8, page 14.

erence to the United States. The introduction of Atlantic Steam Navigation, supercedes the necessity of curing Teas for exportation to Europe by fireing. We can sun dry all our Teas and deliver a cargo in fifteen days from the port of shipment, instead of one hundred from the ports of China or India. In twenty days from the time of plucking the leaf, we can deliver Tea to the consumer in London or Paris, fresh as if grown in Kew gardens, or the garden of plants. Such an advantage, if it stood alone, is certain to give the American cultivator the pre-eminence in supplying this great staple of consumption, to the population of Europe. No competition can stand against it. We have the right, the privilege, the power, and none can pluck them from our hands. We must supply Tea for our own consumption, and for the nations of Europe, because we can supply a better quality at a cheaper rate than any other nation. In this respect we are not the middle Kingdom of China, but the middle Kingdom of the civilized world. The blessing of God, our own industry, and Steam Navigation, will force upon us the Tea trade.

Sun Drying.—But to proceed to the second method practiced in China of curing Tea, that of Sun drying. This mode is confined to Teas for home consumption, and exportation by land to Russia, and is, I apprehend, the only mode adapted to the practice of this country, whether the Tea be designed for home consumption or exportation.

Every horticulturist of ordinary experience must be accustomed to cure domestic herbs, as mint, sage, sweet majoram and the like, for family use. He knows the exposure of herbs to a very hot sun at first, is not the best way of curing them; but a shaded sun and dry air will accomplish the object in a more gradual and perfect manner. The herb is perfectly cured, the whole flavor retained, and the labor trifling. Independently of the saving of labor, the great advantage of sun drying results from the fact that the aroma of the Tea, its rich fragrant properties, escaping from the essential oil of the leaf are more entirely preserved, and our American sun cured Tea must of necessity, and as a natural consequence of that mode of curing, be far superior to any that can be imported from China or India. From 1810 to 1815, I was engaged in the Russian trade between London, St. Petersburgh and Archangel. I used to request my captains to bring me a small catty of Green Tea when they returned from Russia for my own use. I could not import any large quantity, as I was obliged to smuggle what I did get, because the East In-

dia Company, under their gigantic chartered monopoly, stood like an avenging angel with flaming sword to defend and protect their paradisaical Tea gardens from the encroaching foot of the less privileged. But I always succeeded in getting in a small quantity. That Tea delighted and astonished all who drank of it. The room where it was made was perfumed with the most delicate and exquisite fragrance and the luxury to all lovers of good Tea, could not be paralleled in London. At that time I only knew the fact, but was entirely ignorant of the cause of this excellence. But since my attention has been drawn to the cultivation of the Tea plant in the United States, I learn that all the Tea destined for the Russian market from China, is *sun dryed*, and all of course transported by land carriage. The mystery is explained, the cause of superiority developed and a lesson recorded for our instruction.

Age is detrimental to the quality of Tea. It divests it of a portion of its aromatic properties, and causes a lifeless, spiritless, tasteless insipidity. The charter of the English East India Company compelled the corporation always to keep a year's stock on hand. The consequence was, the people of England always drank old, and therefore bad Tea, sometimes two or three years old. It is a singular fact that they had used it for so long a time, that even the old Tea dealers of London were perfectly satisfied that old Tea was better than *new*, and that no Tea was fit for use until it had been kept two or three years. At the time when the East India Company monopoly was abrogated in 1833, and went into full effect in April, 1834, I remember holding an argument with an old Tea dealer in London, who had been all his life in the Tea trade, upon this identical point. He maintained most strenuously that we should find the opening of the Tea trade a most tremendous and aggravated evil, because the market would be inundated *with fresh* Tea, and we should have none old enough to be fit for use. In corroboration of my opposite views, I mentioned to him a circumstance which occurred in 1807. I was on a journey in company with the late Col. Humphrey ex-minister to the court of Madrid, and his lady from Rotterdam to Paris. We arrived after stopping a short time at Antwerp, at Brussels in the afternoon. Being much fatigued, for we had no steam ships or railroads in existence then, we ordered Tea with our dinner. It was peculiarly fine and exceedingly fragrant; I could find none equal to it in London I called the waiter to enquire where it was obtained: He replied that an American ship had just arrived at Antwerp from China, and this was some of her tea. Here was another exemplification, and it seems extraordinary that any exemplification at all

should be necessary of so plain a matter of fact, that this comparatively new Tea had not had time to lose its original fine qualities by age, seeing we drank it as near the time of its being cured as practicable. My argument however availed nothing against deep rooted and full grown prejudice, and my old friend, the Tea dealer, remained of the same opinion still. But time and truth which tread down ignorance and folly prevailed at last; and the Tea drinkers of England have learned that old Tea is a very different thing from old wine.

One more testimonial on this point will suffice.

The Foreign Missionary published in New-York, September, 1847, No. 47, contains an article from an American missionary, giving an account of his journey to the Tea gardens near Ning-po, where green Tea is grown. He remarks that "we drank some green tea in less than thirty-six hours from the time the leaves were plucked from the plant. There is hardly anything so delicious as fresh green Tea drank, as the Chinese always drink it, without sugar or milk. But," he continues, "you must come to China if you wish to taste this luxury, for all green Tea loses *much* of its flavor by being kept; and the *finest kinds* will not bear to be transported across the ocean." This, a late and undeniable authority, is sufficient I trust to establish the facts for which I contend, that we shall never have the finest qualities of Tea until we cultivate them ourselves, and negative the opinion that we must make a voyage to China for a cup of good tea.

Considering the dry atmosphere, air, and hot summer's sun with which we are favored, I apprehend we cannot have any occasion for *firing* the Tea Leaf at all. But a judicious system of *sun drying* is all that can be required in this country in fine weather. In foul weather and a pressure of work, an air stove, easily constructed, would be a cheap, cleanly, and I think effectual method of curing the leaf.

The manipulations of the leaves, whether old or young, can be of no use except for a disguise. The quality of the Tea cannot be changed by changing the shape of the leaf, abundantly evidenced by its resuming its original shape by infusion in boiling water. I cannot help thinking therefore, that all this studious preparation aside from drying, is entirely adapted to the eye, and by long continued custom the thing becomes in some degree necessary to meet the

fashion of foreign markets, and gratify the pre-conceived notions of an ignorant and formal people. But there can be no necessity for treading in the footsteps of ignorance, and relinquishing the dictates of common sense until we find by experience that a Tea Leaf must be rolled into a wad before its Tea-making properties can be developed. This is a match to the wisdom of the old Tea dealer. At any rate we know, if any benefit results from rolling the Tea Leaves in the process of curing, we can perform that operation just as easily and just as cheaply as a Chinaman.

Dyeing.

Although we can hardly consider the Chinese a very knowing or very wise people, yet they are knowing enough, and wise enough, and cunning enough, to adapt the style of their commodities to the taste of their customers.

When they perceive that their English and American purchasers judge the quality of Teas by their color rather than by their taste, their ingenuity is challenged to suit the color to the market, and by the use of various dyes and drugs to make the worse appear the better quality. This is an habitual and common practice. Log-wood, copperas, carbonate of copper, prussian blue, &c., are all used according to the shade of color and particular bloom required. But perhaps the most deleterious of all the dyes used is the prussian blue, a subtle poison, most destructive to health, and the only reason why we are not poisoned to death out and out, is that the quantity used is not quite sufficient. But although the Chinese are not very particular to guard the health of their neighbors, they are vigilant enough to watch over their own. They never poison themselves. They are satisfied with the taste and quality of the Tea without regard to the color. If this does not show genius, at any rate it shows a roguish disposition to accommodate us barbarians, by gratifying our national whims when it is their interest so to do. I propose to abolish all dye shops and to preserve the quality of our Tea beverage, by the exclusion of all poisons and all other drugs from the Tea-pot, and by a complete restoration of the herb to its natural purity. If this purification should in any degree contract the circle of medical practice, and curtail the bills of mortality, it will show that the tomb has already received its tribute from that source, and we decline paying any further demand.

It is not enough to satisfy ourselves that the Tea Plant will flourish in the United States. It is necessary to consider its product and the expense of growimg and preparing the leaf for consumption. If the cultivation will not remunerate the husbandman, it is of little consequence whether the plant will grow in our climate or not.

It has been already noticed that the Tea Plant is set in rows four feet apart each way in regular plantations. An acre of land therefore, 400 by about 109 feet, will receive 2500 plants. The average product of *three year old plants* according to Mr. Gordon's Report, which is the lowest estimate I have seen, is $1\frac{1}{3}$ ounces of dry Tea for each plant, yielding 208 pounds an acre. But the product of more fully grown and larger sized plants will average about 5 or 6 ounces for each plant, and some have estimated the largest trees to average from 16 to 24 ounces each.* But I think the range of productions from the lowest estimate for young plants, $1\frac{1}{3}$ ounces, *av.*, to the highest for larger plants, 6 ounces, may be depended upon as a correct general average product. No doubt some plantations will be more productive than others, from better cultivation, better soil, and better location, and we may fairly take the general average of production at $3\frac{1}{2}$ ounces *av.*, for each plant—equal to 547 pounds per acre. The value, like cotton, tobacco, wine, and other products of the vegetable kingdom, will depend upon the quality. The finest bud Tea will be worth two dollars a pound; the coarsest and inferior qualities, perhaps fifty cents. An assumed average may be taken at a dollar a pound.

The expense of gathering and curing the leaves.

The labor of gathering the green leaves in China is performed by women and children at task work. One cent is paid for three pounds of green leaves.

Expense of curing in China.

The labor of curing tea in China is performed by professional men, who travel about the country with the necessary implements for fireing and kneading the leaves, as they are sent to the drying establishment, constructed for the purpose. The regular charge is

*Foreign Missionary, August, 1847, New York, by W. M. L.

five dollars a pecul of 133⅓ pounds of dry leaves. The total charge therefore from the shrub to its preparation for market, is for gathering five pounds of green leaves equal to one pound of dry Tea.

Curing,.....	One cent—66 mills lb.
By professional men for market.....	Three " 70 " lb.
	Five cents, thirty-six mills, 5.36 per pound.

To prepare Tea for home consumption or exportation in this country, we do not consider it necessa.y to go through the process of *fireing*, nor the various manipulations connected with that process; the expense of labor will therefore be proportionably diminished, and supposing, what undoubtedly is the fact, that the value of labor is much less in China than in the United States, the difference in the quantity of labor expended will probably equal the difference of value, and reduce the actual expense in both countries to about the same level. Five dollars and thirty-six cents will, we imagine, cover the expense of gathering and curing a hundred pounds of Tea in the United States. But whether it will or not, there is ample margin for a greater expenditure, should it be necessary, without extinguishing the ardor, or discouraging the hopes, or materially abridging the profits of the husbandman. So long as we can grow a pound of Tea at as little expense as we can grow a pound of cotton, we shall never want a market nor encouragement to supply it.

We cannot ascertain with any accuracy, the average rent and taxes upon an acre of Tea growing land in China, but we may venture to assert that the annual expenditure on that score, will exceed the purchase money of an acre of freehold land in this country.

NO. III.

Healthfulness of Tea Beverage—Exemption of the Chinese from Influenza—Few Cases of Cholera in China—None of the Plague or Stone—Moral and Social Effects of Tea Drinking—Proved salutary in Russia and Great Britain—Chemical analysis demonstrates its wholesome qualities.

If I were about to recommend the introduction of a plant which in its use, could in any degree prove detrimental to the health of the population of the community, I should, whatever adventitious advantages it might promise, shrink from the responsibility. But so far from that being the case, I may boldly and fearlessly challenge

the experience of mankind, the history of the plant, and the science of the materia medica, to produce a single instance of its deleterious effects upon the constitution of man. On the contrary, all combine to prove that nothing used as a beverage, has yet been discovered so salutary to the constitution, so agreeable to the taste, so refreshing to the spirits, so innocent in its essential properties, and so tranquilizing to the nervous system as the free use of Teas. Allow me to enlarge a little upon this point, and to adduce some powerful authorities to fortify and confirm these remarks. In China, where the plant is most cultivated, and has been from time immemorial, and most universally and most profusely used, we naturally look for the strongest and most unequivocal testimony of its practical consequences upon the human constitution. No other nation uses it at all times, and so generally, as almost entirely to exclude all other kinds of beverage. It is not an unusual thing for a laboring Chinaman to drink a hundred cups a day. It is always ready prepared in a vessel provided for that purpose, and all this, which we should be apt to consider an excessive consumption, without the slightest injury to the general health and physical system. But it ought to be borne in mind that the Chinese use it pure, unadulterated with noxious dyes, and unmixed with exciting drugs. The celebrated Dr. Letsom, of London, raises his potential voice against the villainous habit of Tea dealers in vending Teas deteriorated by spurious mixtures of trash, worse he says "than dirt The effects of bad Teas upon the system are always deleterious and distressing, if not positively dangerous. Constriction of the chest, depression, craving emptiness, sinking of the stomach, etc., etc., are the inseparable consequences. Whilst pure, good Tea exercises the most invigorating and renovating effects on the general system." The caution of the purchaser is one remedy, but he is not always a good judge, and often purchases Tea because it is Tea, without sufficient ability and experience to discriminate between genuine pure Tea and its worthless imitation. Therefore, the only certain protection against imposition, is to grow it one's self, and preserve it as pure as he would any other herb of domestic use. One more case I beg to mention which involves matter for serious reflection, especially for the southern portion of our population. I find the article in an anonymous publication on the subject of Tea and its medicinal effects. The author quotes a letter written by an East India Captain in the East India Company's service, addressed to the Medico-Botanical Society, London.]

He remarks, "There are two circumstances connected with the exemption of the Chinese from epidemics, that have spread such

devastation among the inhabitants of every corner of the globe, which have fallen particularly under my observation, and which I take the liberty of laying before you. The one is, that when in China, during the year 1829, the influenza prevailed to such an extent on board the ships in the fleet, and also among Europeans in Canton, that scarcely one escaped the complaint; on board one ship in particular, out of a crew of one hundred and thirty-six, no less than one hundred and twenty were laid up with the epidemic at one time, yet neither then, nor up to the time of my last voyage to China, had a single Chinese, that I could hear of, been attacked with the influenza, although in the mean time this epidemic had spread over all India and Europe, and crossing the Atlantic, had visited America. The other fact is, that although on each one of eight voyages I made to China, many of my crew had fallen a prey to cholera, yet I have never heard of a Chinese being attacked with this fatal epidemic. And this is the more remarkable from the crowded population of the country, subsisting as they very often do on very unwholesome food. As then the Chinese, with whom Tea is the universal diluent, have escaped diseases that other nations, and more particularly the Coffee drinking French, have suffered so much from, it may not be unworthy the attention of the society, whether Tea may not be regarded as the principal cause of this happy exemption from such fatal and wide spreading maladies."

The captain is undoubtedly correct in respect to his immediate sphere of observation, Canton, at the time he wrote, as to the non-appearance of the cholera in China, but further evidence rebuts his testimony so far as it relates to that particular disease. Upon the authority of the Chinese Repository, it appears that the cholera raged at Ning-po in 1820–23, at Amoy and Changchau and the vicinity of those places in 1842. We have no account of its appearance in Canton, excepting a few cases in 1835.*

But it is a remarkable fact in connection with this branch of the subject, that the Javanese and Chinese Tea drinkers are entirely exempt from those two great scourges of the human family, the plague and the stone.† Nevertheless, when we consider the density of the population of China, 450 in some provinces to the square mile, and the vast aggregate of 300,000,000 who people the country, we cannot fail to perceive that the ravages of the cholera in China, com-

* Chinese Repository, Vol. 4, p. 48. † Chinese Repository, Vol. 1, p. 488.

pared with its desolating career in Europe and America have been small indeed. If we step from China to the vast empire of Russia, we shall find a hardy, vigorous, and healthful population, accustomed through all the various grades of society to the free use of the best Tea consumed out of China. We do not mean to affirm that this general soundness of health is the effect of Tea drinking only, but we do mean to affirm that Tea drinking has not impaired it, so that the evidence, though negative, is still in favor of the beverage.

In England, the consumption of Tea, even under the crushing pressure of a duty of fifty cents a pound, has greatly increased within the last few years upon the sole ground of benefiting and preserving the health. The current of popular opinion is setting strongly against the use of coffee; it is considered as exciting to the system, provoking watchfulness, feverish re-action and plethora, whilst Tea acts as a gentle diuretic, promotes digestion, soothes the stomach, and tranquilizes, rather than excites the nervous system.

In France, as well as in our country, we usually find copious drinkers of coffee dyed a beautiful saffron color, affording the most palpable evidence of incipient disease and organic derangement. It is hard to change old habits and perhaps unfair to charge all our complaints to one, and yet it does seem a little singular when a person sees his own sallow face, that he does not take the hint, change his diet, and watch its effects.

In this country, particularly, there is a marvelous tendency in all classes to raise a mighty cry against the presence of bile, and to refer all complaints to its maledictive influence, just as if it were some poisonous substance which had crept into the system, instead of a necessary healthful element of our organic combination, aiding, and directing its functions in all the various operations of the animal economy.

At a meeting of the Academy of Sciences in Paris, M. Peligot read a paper on the chemical combinations of Tea. He stated that Tea contained essential principles of nutrition far exceeding its stimulating properties, and showed that Tea, in every respect, is one of the most desirable articles of general use. In one of his experiments on the nutritious qualities of Tea as compared with those of soup, the result was decidedly in favor of the former. It was found to contain a large proportion of azote approaching to animal matter, and to exercise a powerful influence upon the animal system, and particularly in its *promoting the secretion of bile.*

Coffee, as well as Tea, possesses this chemical characteristic principle, and it is a singular fact that they agree in no other quality. It has been suggested that the extensive use of these two articles of food and luxury among all the civilized nations of the earth, would seem to argue a manifestation of Divine wisdom in providing them so abundantly for the health and enjoyment of the human family.

Tea beverage holds a moral, social, and religious influence over domestic society. The equanimity of the family circle is steadily maintained. A scolding, brawling termagant is out of place, she is more likely to be a gin than a Tea drinker. We would always have Tea upon the table if it were of no other use than to preserve and fortify domestic cheerfulness. To the ladies therefore, whose sphere is domestic tranquility and whose prerogative it should be to maintain it, the subject comes bearing its own recommendation in the cup, "that cheers but not inebriates."

Tea induces a subdued cheerfulness, adverse to hasty, uncontrolled passion, brawlings, fightings, and tumultuous strifes; neither depressing the spirits, by gloomy shadows of future ills, nor elevating them beyond that sober and discreet point, consistent with the condition of mankind, hourly exposed to the various disasters and vicissitudes of life. The thoughts of one thus possessing his soul in cheerful tranquility sit easy upon him, and his faculties clear and undisturbed are always in a train to afford himself entertainment, to administer comfort to his neighbor, or, what is more important, to hold high communion with the Great Author of his being.

He knows how to enjoy and to relish in temperance, the blessings a kind Providence has spread around him, and others are imperceptibly led by the force of his example to participate in the same enjoyments. This is the highest attainment to which our fallen nature in its present transitory existence can aspire. Good health is so nearly alied to the temper of the mind, that we must always recognize its near affinity with whatever tends to improve or control it.

Water alone, although cherished by enthusiasts, and puffed by reformed drunkards, from the earthy substances held in solution, from the innumerable animalculæ sporting in their bath, imperceptible indeed to the naked eye, but visible and frightful enough when viewed through a microscope, is always unsuitable for a general beverage, and more likely to breed than to assuage disease. When purified by boiling and qualified by an infusion of Tea, it is divested of it,

impurities, ebbs and flows freely in its clarified state, through the delicate channels that receive it, imparting strength and vigor, and beauty to the human system.

The medical profession, whatever may be the vague and baseless opinions sometimes formed and expressed of the tendency of Tea to induce nervous affections, must nevertheless yield to the demonstrations of science followed out by the enlightened practice of nations. The human mind expands as gradually as a cotton plant, and is always reluctant to abandon an old thought or to accord with a new one. When Tea was first introduced into Europe, about 1660, the public, who knew nothing at all about the matter, were greatly alarmed for the safety of the state.

A Frenchman raised a hue and cry against its introduction, and called it the impertinent novelty of the age. In Germany, Tea dealers were considered as immoral subjects, thieves, rogues, and hostile to the peace of society. A physician in England was more charitable. He considered the pretended virtues of Tea as a deep laid scheme to encourage its importation and to sack the pockets of the people. From that day to this, the consumption of Tea has continued to increase in both Europe and America, and the longevity of the people has increased with it. At any rate, in no Tea drinking country has the health of the people been abridged, or the measure of life shortened.

No. IV.

China supposed to be the only country capable of growing Tea—Examples of Tea cultivation in districts out of China—Java—Brazil—Assam—District of Kamaon—North-west provinces of India.

The mind of all nations has been fastened exclusively upon the soil of China as the only land which Divine wisdom has prescribed for the cultivation of the Tea plant. Until very recently, no efforts whatever have been made to test the validity of this established opinion, and to show that the Celestial Empire has no charter guaranteeing to her the monopoly of this vast and profitable field of agricultural industry. The supremacy of intellect in this country has bowed submissively to the common delusion without enquiry into its character, and without the slightest attempt to dissolve it. It becomes therefore a matter of paramount importance to examine how far we

can gather evidence from actual experiments to prove the fallacy of such opinions, and to fortify and confirm our views in the prosecution of an agricultural enterprise, new to our country.

All the experiments that have been made are of recent origin; if all have failed we must admit the evidence is against us, and our prospect of success too circumscribed to justify another experiment. But if, on the contrary, *no* experiment has failed, but *all* have succeeded, then we have a demonstration in our favor which supercedes the idea of its being a mere theoretic speculation, throws all doubt to the winds, and places the hope of the husbandman upon a basis which cannot be shaken.

1st. The Dutch made the first movement to break the charm of Chinese monopoly, by introducing and cultivating the Tea Plant, in their rich and fruitful colony of Java. That Island lies between the 6th and 8th degree of South Latitude. They succeeded in the cultivation. The mountain range which runs through the centre of the Island, is the most productive, because the Tea Gardens, extending from near the base, high up the mountains, reach an atmosphere tempered by elevation. The plant escapes the scorching heats of the torrid zone, and finds a climate by height, rather than by latitude, adapted to its nature. But the plant is not confined to lofty ridges. In the plains, the hedges, and fences if one may so call them, are all planted with the Tea shrub, which flourishes in greater or less perfection throughout the Island. But, as has been already intimated, the equatorial latitudes are not the most auspicious for the vigorous growth of a plant that requires a temperature, equally removed from the extremes of heat and cold, and the quality of the Tea is as much affected by the climate as the growth of the plant. Considerable quantity of Tea is annually shipped from Java to Europe, but the extension of the cultivation is no doubt checked by the exceeding fertility of the soil, and its adaptation to the growth of the rich products of tropical regions.

2d. The Tea plant was introduced into Brazil about 1817, when the Royal House of Braganza emigrated from Portugal to that Colony. The plantations lie between the equator and 10° South Latitude, nearly parallel with Java, and of course are exposed to the same intemperate climate, and suffer in a similar manner. In addition to these physical disabilities, the enterprise has had to contend with the natural indolence of the natives, the universal repugnance to labor, the crushing effect of committing so important a work to

the superintendence of slaves and overseers, the amazing fertility of the soil, the extent of unappropriated land, the ease with which subsistence can be obtained, and the low degree of personal enterprise.

These are frowning features and would rather seem to indicate a failure before the attempt at cultivation was made. But nevertheless the plant does flourish to some extent even in Brazil, under all the disparaging circumstances which surround it. From the Brazilian Consul General, Louis H. J. De Aquiar, Esq, whom I have consulted on this subject, I learn that although the plant for some years after its first introduction received but little attention, and was almost abandoned, yet within the last few years the cultivation has revived, and is now prosecuted with energy, and with a corresponding success. Some of the large and wealthy land proprietors of Brazil have directed their attention to the cultivation of the Tea Plant; and he mentioned one gentleman in particular, whose name I do not at this moment recollect, who had entirely abandoned his coffee plantations, and directed his attention to the cultivation of the Tea Plant. The market of Rio Janeiro is supplied entirely with Tea of domestic growth, and the public mind is awakened to the prominent fact, that no plant cultivated in Brazil is more profitable, and none is now receiving more decided attention.

But as the veil which has hung over this subject for all past time is lifted, and the clear light of demonstrated facts disclosed, we shall perceive that the nearer we come to our own times, the more decisive is the evidence of the practicability of breaking up the Chinese monopoly and of freely participating in the benefits which that monopoly has withheld.

To Great Britain we now turn our eyes to witness the most promising and satisfactory efforts, that have as yet been made, to extend the cultivation of the Tea Plant, and to render the British Empire independent of China, for a supply of an article of consumption so indispensably necessary as Tea. Considering the commercial and agricultural enterprise of the English, the contiguity of India to China, the vast amount of Tea imported, and the ample means and resources always at command, it does seem surprising that so important a step should have been so long delayed. We cannot account for it upon any other hypothesis than that Great Britain has hitherto been more eagerly bent in extending, rather than improving her Indian conquests.

The Kingdom of Assam, lying upon the eastern frontier of India, between Lat. 25 and 28° N. is now under the sway of the British sceptre. In 1834, a project originated in London to introduce the cultivation of the Tea Plant into that Kingdom. The northern section of the Kingdom being a broken and hilly country, was wisely selected as the most favorable location for the experiment. A joint stock company was organized in London with a large capital, and the secretary of the company, Mr. Gordon dispatched to China in 1835, to reconnoitre the Tea-growing districts, and collect such information as might forward and facilitate the operations of the company. His success was partial, arising from the natural jealousy of the Chinese, and the difficulty encountered in penetrating the interior of the country. The information, however, which he gained, very important and very minutely recorded, was transmitted to Muttuck, in Assam, with the view of forming establishments for the cultivation of the Tea Plant. Singular as it may appear, it was now discovered that the Tea Plant was indigenous to Assam, grew naturally upon the hills and mountains, as evergreens do upon our hills and mountains, and only required cultivation, to equal the growth of China. Samples of the Tea grown in Assam, were forwarded to London from time to time, (which I might have seen, as I was then residing in that city, and personally acquainted with some of the gentlemen concerned in the undertaking, and certainly should have seen, had I felt the same interest in the matter then, that I now feel,) in order to test the quality, and by exhibiting the product itself, to disarm opposition, and strengthen support.

So late as 1847, twelve packages of Tea containing, 533 pounds of black and 266 of green, were shipped to the directors of the East India Company the produce of Kumsoon, Assam, to have the value of this new article from India tested in the English market. The English Tea Company of Assam, has prosecuted the cultivation, with a zeal and perseverance, characteristic of the people. It is now regarded as one of the most important enterprises connected with British India. A steam saw-mill was early established, and a steamboat provided. The former to prepare the chests and boxes for packing, the latter for navigating the river Mingan, for transporting the Tea to the shipping posts of India.*

The Friend of India, for March 12, 1840, remarks, speaking of the prosperity and extension of the labors of the company, " that no fewer than 1733 laborers have been sent to Assam from various

* Chinese Repository, vol. 9, p. 112.

parts of India, that 49 artificers have also been engaged, and 500 Chinese laborers, are on their way to Bengal, in the service of the company." A communication has also been opened with the Burmese authorities, across the Monipur, with the Chinese province of Yunan, to induce Chinese laborers to emigrate to the province of Assam.

The strongest expectations are indulged, that ultimately the cultivation of the Tea Plant in British India, will be carried to an extent sufficient to supply the English market.

The question, therefore, regarding the successful cultivation of the Tea plant, in districts out of China, is completely solved by this experiment. But we are not limited to a solitary example in the East Indies. In addition to information derived from personal correspondence with residents in the Northwest Provinces of India, I find in Simmons' Colonial Magazine, published in London, 1844, vol. 2d., an account of the experiments instituted at Kemaon, in the neighborhood of the Himmilay mountains, as well as at Almura, preparatory to the extended introduction of the Tea Plant. It is worthy of remark, that these plantations in N. Lat. about 30 to 31°, are more than 1000 miles inland from the shipping port of Calcutta, and still further from the plantations of Assam. "It would seem," says the writer, "that these experiments, so far as they have gone, have been attended with complete success, but commenced as they were eight years ago (that is in 1836) we cannot discover from what cause so little progress has been made in the cultivation of the Plant, until two years ago, when the experiment was energetically carried on for the first time. In 1841 the nurseries consisted of twenty-three acres of ground, in 1843 they were increased to fifty-five acres, containing 43,000 Tea-bearing Plants, and 27,000 which will yield produce this year together with seedlings and cuttings, sufficient to cover fifty-five acres of land which has been prepared for their transplanting. During the current year, 1844, the amount of Tea produced will be very greatly increased and we may hope from the activity of the able superintendent of the Botanical gardens, Dr. Jameison, who has charge of the Tea nnrseries, that the cultivation of the plant, will soon be demonstrated to be so profitable as to induce private planters to turn their attention to it.

Specimens of the produce sent to Messrs. Thompson & Son, London, were declared by them to be fine flavored and strong equal to

the superior black Teas sent to them as presents, and better for the most part, than China Teas imported for mercantile purposes.

Such is the most conclusive evidence afforded by this second East India experiment in proof of the practicability of growing the Tea Plant, in districts out of China. But in reference to the last experiment, it may be doubted whether a Botanical garden, however able the Professor presiding over its interests may be, is exactly the place for such an experiment. A gentleman who has all the exotics that can be collected, from the four quarters of the world, under his charge, can scarcely be said to occupy a position that would best qualify him to superintend the cultivation of the Tea Plant upon a national scale. By directing his attention to a great variety of agreeable objects, and spreading his paternal care over so large a family, he in some measure disqualifies himself for that constant, minute, and practical attention to *the Plant*, which, especially when under experiment, it demands at his hands. Such an enterprise requires the infusion of a little Tea-leaf enthusiasm—a devotion to the one great object in hand; an attachment to cultivation and horticultural pursuits for the love of them; an untired patience and ardent zeal in communicating instruction to others, upon the subject most immediately in hand, rather than upon the general science of Botany; particulars which can hardly be expected from a professed Botanist, and therefore we think the Editor of the Colonial Magazine may dismiss his surprise that so little progress was made at the commencement of the experiment, but rather congratulate the company that, under such circumstances, the experiment succeeded at all.

NO. V.

Adaptation of the United States to the culture of the Tea Plant—Position of those parts of the United States lying parallel with the Tea growing districts of China,—Delaware—Maryland—Virginia—North Carolina—South Carolina—Georgia—Florida—Alabama—Mississippi—Louisiana—Arkansas—Missouri—Texas—Tennessee—Kentucky,—character of the population—Conclusion.

Having, as we trust, satisfactorily established the proposition by the evidence of repeated experiments in various and widely separated portions of the Globe, that there is nothing so peculiar in the climate, soil, and cultivation of Tea in China, as to confer upon or entitle her to exclusive privileges, or restrain other nations from par-

ticipating in the advantages of its culture; we may now proceed to examine the condition of the United States in respect to the growth of the same plant.

We learn that the plant grows most luxuriantly in China, between the parallels of 20 and 45° N. Latitude. But above 40° and below 20° the climate embracing the extremes of heat and cold, will scarcely admit of the full growth and development of the Tea Plant. The Temperate Zone, therefore, designated by nature, as equally removed from both extremes, has been found by experience, the best suited, in respect to climate, for Tea Plantations.

In taking a geographical and physiological view of that portion of the United States, presumed best adapted to the growth of the Tea Plant, we may assume the Latitude of 40° as the northern, and the Gulf of Mexico as the southern limits of the Tea growing districts. It may be a curious and perhaps useful inquiry as we proceed, to note the corresponding parallels of Latitude, so that we may see what places in China and India, fall under the same parallel as those in the same Latitude in the United States.

The extent of country lying south of 40° N. Latitude, embraces Delaware, Maryland, Virginia, North and South Carolina, Georgia, Florida, Alabama, Mississippi, Tenessee, Kentucky, Arkansas, Louisiana and Texas, fourteen States, and partially the four States of Indiana, Ohio, Pennsylvania and Missouri, whose limits, according to the above mentioned division, extend both above and below the Latitude of 40°. I am quite aware that this view, and indeed any view, which embraces the idea of growing Tea at all in this country, is altogether at variance with the one generally entertained; but, we trust that those who have had patience to follow us in the investigation, will see the error, and lend their influence in correcting it.

The maritime district of the territory comprised within the limits of the several Tea growing States, mentioned above, extending from Galveston to Delaware inclusive, and stretching from fifty to one hundred miles inland from the coast, being generally subject to annual inundations, and of a low, marshy, alluvial, sandy soil, is manifestly of a character destitute of the required qualifications for the growth and cultivation of the Tea Plant. We may therefore at once exclude all that strip of land from further notice.

Delaware, Lat. 38° 27′ to 39° 50′. The whole of this State is but little, and but a small portion of that little is adapted to the culture of the Tea Plant. Perhaps the only part of this State which affords a reasonable hope of success, is the northern and hilly district in the county of New Castle.

The Latitude of this county is parallel with that of Peking, the capital of China, in the northern province of Chihli, one of the finest Tea growing districts in China. Therefore, let not Delaware despair.

Maryland, Lat. 37° 56′ and 39° 44′. The mountainous and hilly western counties of Maryland, Alleghany, Washington and Frederic particularly, seem to offer choice and advantageous locations for Tea Gardens to a limited extent. The position of the mountains and hills, running east and west, and sloping to the south, presents the best possible aspect. The soil, limestone and gravel, is congenial to the plant, and combined with the favorable aspect, promises well for the future cultivator.

The Latitude of Maryland Tea growing hills, is parallel with Tsinan-fu the capital of the province of Changtung, and one of the Tea growing provinces of China.

Virginia, Lat. 36° 30′ to 40° 43′. That there are mountains and hills and valleys and soils and rivers, in the wide spread domains of Virginia, sufficient to meet the demands of all the enterprising Tea cultivators in the union, for many years to come, I think no one will venture to deny. The introduction of a greater diversity of agrarian products into the ancient dominion, together with a fresh infusion of modern dispatch and electric spirit, seems indispensably necessary to put forward the agricultural prosperity of the State. If any evergreen plant is indigenous to the soil, any exotic finds a congenial climate, then it is most certain that Virginia may herself, in a few years, render the Union independent of China for our daily beverage. Philosophy is the teaching of experiment, and as similar causes will, under like circumstances, produce similar effects, we argue that as the soil, climate, temperature and location in Virginia are similar to the same physical causes in China, we are justified in expecting, nay, are constrained to expect, the same effects.

The Latitude of Virginia, on its southern limit, being only one degree, twenty-six minutes below that of Maryland, the parallels of

Latitude will pass through part of the Tea growing provinces, Shangtung and Shansi, northward of the Yellow river, *three and a half degrees south of Peking.*

North Carolina, Lat. 33° 50′, 36° 30′. Leaving the low, sandy, desolate and unhealthy coast, and penetrating the interior for about eighty miles, we come to a broken and hilly surface, fertile soil, and salubrious climate, which seems formed and destined to be occupied by a vigorous and industrious population, for the very purpose of enriching the State by the cultivation of the Tea Plant.

It will be noticed that we are now about six degrees south of Peking, in a line parallel with the great Tea growing provinces of Kiang su, Honan and Shensi, south of the Yellow river, and if the Tea Plant will not grow as thriftily in the western part of North Carolina, as it does in the above named Chinese provinces, there must be some physical cause which the wisdom and sagacity of philosophy have not yet discovered.

South Carolina, Lat. 32°, 35° 8′. No cultivator of the Tea Plant should waste his time in searching for a favorable location in this State to prosecute his labors, until he reaches the high hills of Santee about ninety miles from the ocean. He will probably find many places here suited to his purpose, but if he fails in that, he has only to push on to that portion of the State, usually called the Upper Country, in the north-western district, where he will find himself enveloped with hills and mountains, luxuriant valleys, crystal streams, the most fertile soil, an Italian sky, and a Mediterranean climate. He need go no further, if his object be to establish himself in South Carolina.

We are now *eight degrees south of Peking* and parallel with the three most abundant Tea growing provinces of King su, Nganhwui and Hupeth. It will be remembered that Peking and the circumjacent district produces the finest Tea grown in China.

Georgia, Lat, 30, 42° and 35° The upland territory of this State lying between 33 and 35° of Latitude, presents features of a rough, hilly, and in some parts, mountainous character, which seem to designate it as the only favored tract in this State, destined to form the Tea Gardens of Georgia.

Blessed with a diversified and fertile soil, a healthful and salubrious climate, there can be no reason why Georgia, like some of the

provinces of China, should not convert a portion at least, if not the whole, of her upland cotton into Tea growing plantations, and thus extend the circle of agricultural industry to embrace a greater variety of objects, and render those lands which are now the least valuable, the most productive and the most profitable.

We are now upon a parallel of Latitude ten degrees south of Peking and about the centre of the Tea growing districts of China. Parallel with the provinces of Kiang su, Nganhwui, Hupeth and Szchuen, in China, and Almura in the north-west provinces of India.

Florida, Lat. 25 to 30°. Notwithstanding the general aspect of this State does not present those rugged and austere features which are most congenial to the growth of the tea plant, yet we cannot doubt but that sections of lands may be found in the State suited to its cultivation. It being the most southern limit of what we have, by way of distinction, called the tea growing districts of the United States, every one must feel the importance of extending the growth of the tea plant to that extreme limit, and over the widest space; because it is in that way only, we can learn the particular, as well as general capacity of our country for its production, and what is equally important, the various qualities of tea, which allotments of land in different States, will return to the cultivator. We may, indeed, be embarrassed by physical impediments, or encouraged by physical advantages, which lie beyond our present view, and which can be developed only by experiment, yet the magnitude of the result is a sufficient inducement to command a fair trial. We cannot help, therefore, thinking that this sunny region will early rival the antipodes in the rich productions of her pregnant soil.

We are now fifteen degrees south of Peking, and the latitude of Florida is parallel with the tea growing provinces of Fuhkien, Kiang se, Hunan, Kwichau, and Chehkiang in China, Muttuck, and the tea gardens of the English Tea Company in the kingdom of Assam, on the eastern frontier of India, and at Almara and Kimaon, near the Himmilay mountains, Northwest provinces of India.

Alabama, lat. 30° and 35°. The southern and middle sections of this State, are subject to the same objections which have been noticed in reference to the Atlantic and Southern States bordering upon the Gulf of Mexico. But North Alabama opens out an extensive field of mountainous and hilly land, which from the fertility and character of the soil, the temperature of the climate, and the general fea-

tures of its surface, seem particularly well adapted to the growth of the tea plant. The sublimity of the Blue Ridge, subdued to a gentle elevation, shaping its course from east to west, and sloping off in an inclined plane to the southward, presenting a sunny aspect on the one hand, and mountain barriers against the rude storm and boisterous winds of the north, on the other; point out this location as one destined to form extensive gardens for the future cultivation of the tea plant.

Its central position, in conjunction with the physical advantages, which show themselves on every side, lead us to pitch upon this district, as best suited, under all circumstances, for the formation of nurseries of tea plants, as the basis of extended plantations and cultivation in those parts of the country, which the finger of nature has pointed out as suitable to the growth of tea. We are now about the centre of the tea growing provinces of China, in respect to the parallel of latitude, but not in respect to the extent of country. The portion of Alabama, pointed out as suitable to the cultivation of the tea plant, would not equal in extent one of the seven tea growing provinces of China, lying in whole or in part, between the 30th and 35th degree of latitude.

Mississippi, lat. 30° and 35°. Divested of mountains and hilly districts, flooded to a great extent during the spring and rainy seasons of the year, by the overflowings of the River Mississippi, and spreading out a vast alluvial and rich cotton growing soil, does not seem to possess any of the requirements for the successful cultivation of the tea plant. A conclusion, drawn, it will be observed, from a Chinese practical view of the matter in their own country, without knowing how far the same requirements will be applicable to our own.

Louisiana, lat. 29° and 30°. This State, it may be remarked, is not exempt from any one of the objections which overrule Mississippi as a candidate for the honors of the tea pot. We must relinquish all claims upon her in favor of the great staples of sugar and cotton, and cannot confer upon her, we fear, the additional boon of growing her own tea.

Arkansas, lat. 33° and 36° 32′. The middle and western parts of this State, are described as hilly and mountainous,* and no doubt

*Murray's Encyclopedia of Geography, vol. 3, p. 577.

from the latitude and temperate climate of those uplands, an abundance of land may be selected, just as well adapted as any land in the United States or the Empire of China, in parallel latitudes, to the cultivation of the tea plant. Seeing a new and enterprising population are now rapidly settling that country, the tea plant will no doubt find friends and supporters so soon as it is known that the plant can be obtained, and that no more labor and care is required in its cultivation than in the growth and cultivation of a peach tree.

Missouri, lat. 36 to 40° 35′, is the largest State in the Union, excepting Virginia; the latter covering an area of 70,000, the former of 66,000 square miles. It will be perceived that the State of Missouri, lies in reference to China, between Peking on the North, and the Yellow river on the south, embracing the northern Provinces of China proper and the district about Peking. There appears to be almost every variety of soil in Missouri that can be found in the same parallel of Latitude in the United States. The surface of the State, rough and smooth, rocky and prairie, wet and dry, high and low, with a soil as various as its surface, presents ample scope for the choice of locations adapted to the cultivation of the Tea Plant. And what a boundless market waits for supplies? Instead of importing Tea by the Pacific, she may send thither the produce of her own gardens. The west, the north, and the east will disclaim China so soon as their wants can be supplied by Missouri.

Texas, Lat. 28 to 34°. This young State lies parallel with the middle and most extensive Tea growing provinces of China. The face of the country, in its middle, northern, and western sections, resembles, in many particulars, the corresponding domains of the Celestial Empire, and its climate is just that in which the Tea Plant most delights. The soil requires no aid from the art of man. Plant the shrub and you have the Tea. The native energy, enlarged thought, and bold adventure which impelled the original settlers to abandon their Atlantic homes, and brave the dangers of a wilderness and the hostility of uncivilized tribes, give sufficient guarantee that the opening prospect of a new branch of cultivation will not be overlooked by the husbandmen of Texas, but rather awaken a secret expectation, that few years will elapse before we shall find the Teas of Texas in the Boston, New-York, and Philadelphia markets; and for aught we can know, in the cities of London and Paris. This would not be more extraordinary, however visionary it may appear at present, than the growth of cotton in the United States from the original seed, sprouting upon a dunghill, in 1786, to the enor-

mous growth of two and a quarter millions of bales in 1847. When we see how much has been achieved and in how short a time by human enterprize, in the cultivation of cotton, we have reason to anticipate similar results from the same cause in the cultivation of the Tea Plant.

Tennessee, lat. 35° to 36° 40′. The western slope of the mountains of East Tennessee, and still better, the southern slope of those in Middle and West Tennessee, with their delightful vallies, undulating hills, productive soil, and healthful climate, all combine to recommend this State to the special notice of those who may give their attention to the growth of the Tea Plant. Although its cultivation has been hitherto neglected because no one has stepped forward to introduce and recommend it to public notice; to make known the simple mode of its cultivation, and the ease with which so great and necessary an article of domestic consumption, that shuns the torrid, and delights in temperate climates, can be grown, yet we cannot doubt but that many, fresh from the plough, when they read these notes will look forward, with an instinctive prescience, to the certain result of the application of American skill and industry, to the cultivation of the Tea Plant.

Tennessee enjoys all the requirements that China can claim, and when made acquainted with her privileges, and when she sees the gold mine opened, will undoubtedly avail herself of the gifts of Providence, and be thankful.

Kentucky, lat. 36° 30′ to 39° 16′. This State is one of the most northern of the American Tea growing districts, and yet the whole of it is fifty miles south of Peking, extending thence three degrees and a a half to the southward, and running parallel with the great Tea growing districts of China. This "Garden of the West" is the last State whose Tea growing capacity we design to consider. It will be perceived that I have uniformly avoided the low flat lands, and have rather wandered among mountain scenery, sought the rural beauty of hills and valleys, and have chosen to sit down upon a rugged cliff, rather than upon the muddy bottoms of rich intervals. The strict line of my duty accords with my natural disposition. Although legal and commercial pursuits rendered my residence in London for thirty-eight years, almost a matter of necessity, yet the country was always my delight, rural sports and horticultural pursuits my only amusements. From being so long debarred, in a great measure, from indulging the bent of my inclinations, I return to

scenes familiar in early youth with a zest which privation has increased.

Kentucky I learn is a limestone region, and I suppose often a gravelly soil. Its diversity of surface always courts a choice, and the horticulturist or the farmer can accommodate his particular views, by adapting his location with respect to soil and site to his contemplated object. This, when the climate is congenial to his cultivation, is all that can be desired. So far as we can judge from a close examination of the subject, Kentucky embraces all the requisites the Tea Planter can covet, and if he finds it necessary to make a voyage to China to obtain a cup of good Tea, it will be because he does not choose to make one at home. We do not deem it neccessary to enlarge these notes by any remarks upon the Tea capacity of the amphibious States of New Jersey, Pennsylvania and Ohio. At the same time we fully believe it will ultimately be found that some parts of those States will produce as fine Teas as any portion of the United States or of China. Even the State of New-York we do not consider without the pale of production, but until instruction shall prevail over prejudice, and the force of interest over opposition, we must suspend our anticipations and await the time when oncoming generations will rejoice in the expansion of our labors, although they may not choose to acknowledge them.

From this brief and imperfect sketch of the climate, soil, features of the country, and general capacity of the United States; from the fact that the parallels of latitude correspond with those of the principal Tea growing districts in China and India; from the evidence afforded by all the experiments that have been made, and from the teachings of natural history, that every species of vegetable which grows in the temperate zone, in the four quarters of the globe, grows in the United States, we come to the irresistible conclusion that the Tea Plant will grow in the United States. Indeed, it would be marvellous if that plant, indigenous to the temperate zone, should be the only one which will not grow.

If a virgin soil, picturesque glades, sloping lawns, and spreading vales, and northern barriers, and eastern bulwarks, and the warm beamings of a southern sun are indispensable to the perfect maturity of the Tea Plant, a munificent Providence, foreseeing these requirements, has entrusted them all to the keeping of the American husbandman. God has left him nothing to ask, he is only required and

privileged to act. But I know full well by experience, how hard it is to lead the thoughts of men to travel in a new and untried direction. They love an old pathway, and recoil at the labor of searching out a new one. Incredulity is a common refuge from mental toil. However salutary and beneficial the introduction of a new thing may be either in its use or cultivation, it has always had to struggle with the prejudices and habits of mankind, before it burst into general acceptation. And how can it be otherwise, when opinions are formed, and maintained in the abstract, without any knowledge upon the subject under consideration, and without any disposition to acquire it.

If we have succeeded in proving that our soil, climate, and physical advantages are not only equal, but far superior to those of China, for the growth of the Tea Plant, then we are compelled to fall back upon the population of our country, and ask the questions, which we suppose no one whose heart is warmed by the blood of an American, will answer in the affirmative—are we inferior in intellectual attainment, in native vigor, and habitual industry, to the Tea Planters of the Celestial Empire? Then why is it that we do not annually grow eleven million pounds of Tea for home consumption, and eleven times eleven millions for increased consumption and exportation. The answer involves the sum and substance of the whole investigation, because the industry of our country has not been applied to the production. And if we ask a consecutive question, why the industry of our country has not been applied to the production, the answer is, because no one has taxed himself with the labor of analyzing the subject, and of acquainting the people with the fact that they are the fortunate holders of such a splendid prize. A mighty spirit of enterprise, however, burns in the bosom of our countrymen, which, kindled into action by a clear discernment of their own interests, overleaps every obstacle and urges them forward to the most magnificent results. Fearless of toil, no trifles dissuade, no disappointments discourage, no dangers appal, no sufferings tire, but on they go, periling health and life, body and soul, rushing on thro: gh trackless wilds and savage hosts, through mountain storms and equatorial heats, nothing can overawe, nothing daunt, nothing quench their burning ardor. Such are the elements to which we look for the execution of this great agricultural enterprise, and we do not entertain the slightest apprehension that we look in vain.

Time will unfold the capacity of our country for the growth of Tea, and the native energy and accustomed industry of the husband-

man, will seize the opportunity and appropriate the advantages which have lain concealed from the creation of the world, but are now unveiled and disclosed to his view.

TEA STATISTICS.

The annual consumption of Tea in the United States, is about 11,000,000 pounds. Upon the hypothesis that the average product of an acre of land is 547 pounds, it will require the cultivation of 20,109 acres of land only, to supply the present consumption of the United States.

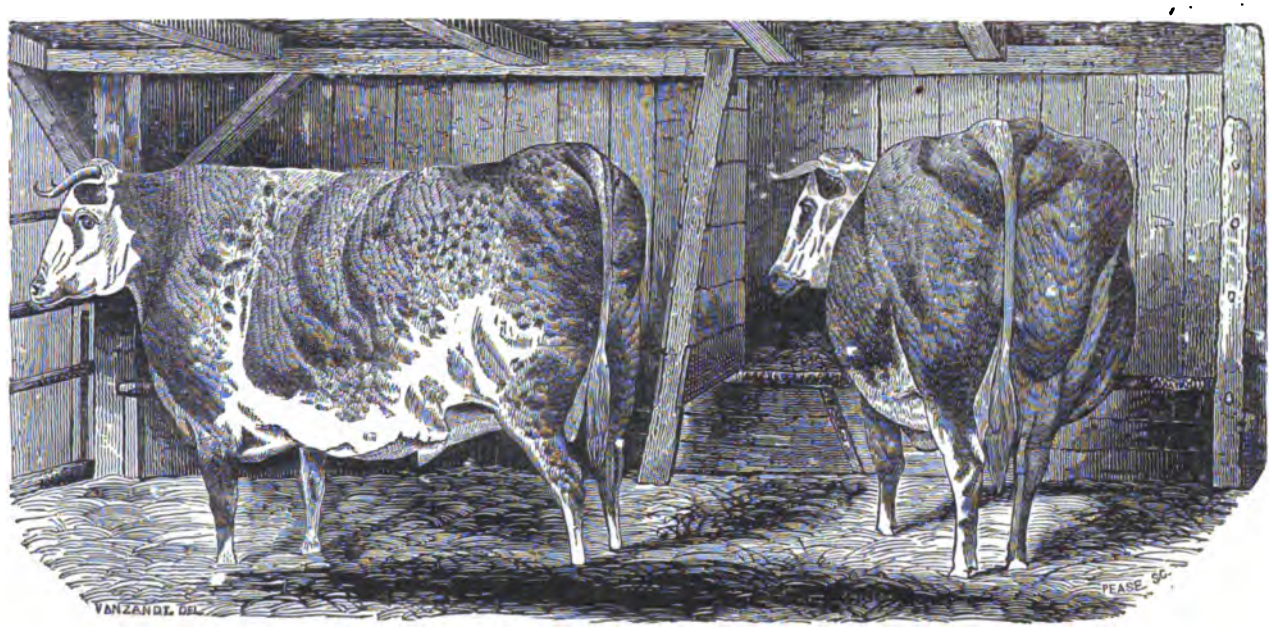
The consumption of Europe, exclusive of Russia, which empire will probably continue to be supplied to the extent of 6,000,000 pounds annually from China, by overland transportation, is about 50,000,000 pounds. The growth of this quantity will require 91,411 acres of land.

The total quantity, therefore, necessary to be cultivated, as Tea plantations, to supply the present consumption of Europe and the United States, exclusive of Russia, is 111,520 acres, averaging 7,965 acres for each of the fourteen Tea growing States.

In 1843–4, Great Britain exported from China 51,417,765 pounds; but this exceeds the general yearly average of export. How much of this aggregate importation was exported to the colonies and the continent of Europe, I have not sufficient data to determine.

It is not possible, from the total want of official documents, to give the amount of Tea grown in the Chinese Empire. We can only form a general idea of the production by the population, and the habits of the people. If we estimate the consumption at three pounds for each individual, which, considering that Tea is the universal beverage of the Empire, I think cannot exceed the consumption, we have the enormous product of 900,000,000 pounds, whilst the whole exportation does not exceed 70,000,000 pounds.

Undoubtedly, the consumption in this country will increase in proportion to the extension and facility of production, as no beverage, with which we are acquainted, will be found so cheap, wholesome, refreshing and nutritious, as Tea at all times, and especially in the high temperature of summer heat.



TWIN STEERS, 5 years old.
Raised by Hon. ALLEN AYRAULT, Geneseo, Liv. Co. Live weight, 5,522. Dressed weight, 4,376.

HON. ALLEN AYRAULT'S TWIN STEERS.

This magnificent pair of steers was exhibited in New-York, and before the American Institute in January, 1848. They were purchased by Bryan Lawrence, and by him slaughtered. Their live weight was 5,522 lbs., their dead weight, quarters 3,450, tallow 512, hides 214, total 4,376 lbs.

The following letter from the Hon. Allen Ayrault, fully details all the particulars regarding them:

Congress Hall, Albany, 12th April, 1848.

B. P. JOHNSON, ESQ.,

Secretary of the State Agricultural Society.

At the request of the Executive Committee, I transmit to you some particulars in reference to the cattle mentioned by you.

The Twin Steers, six years old in the spring of 1847, were from the stock of Samuel H. Fitzhugh, Esq., of Livingston county, who derived his improved stock from the herd of Thomas Weedle of Ontario county.

They were got by the bull *Harry*, who was got by *Rover*, dam *Daisy* by *Wades Eber*, grandam *Laura*, by *Marshal Beresford*—great grandam *White* by *Rose*, by *Seaton's Favorite*, G. G. G. D. *Primrose*, by Colling's *North Star*, G. G. G. G. D. by R. Colling's *White Bull*.

The *Mother* was a remarkably fine animal, both as a breeder and a milker. She was a cross of the improved short-horn stock of Philip Burch, Esq., of Belvidere, Allegany county, and the native stock of the country.

Judge Church was among the first who introduced the improved breed of cattle in Western New-York. It is difficult for the want of sufficient data, to state the exact proportion of the cross in these

cattle, but enough is known to show that it was as high as ¾ or ⅞ of pure Short Horn blood.

The Steers were purchased by me of Judge Fitzhugh, at two years old. That gentleman, in a letter to me of the 3d inst. says: "The Steers while I owned them, received no other care than any other stock. They were, with other calves, taken from the cow at one week old, and received new milk for a week or two, afterwards skimmed milk until 2½ or 3 months old—then turned to grass, taken up in November or the first of December, and fed with hay alone until the 10th or 15th February, then about a pint of meal a day, with a pint of oil-cake a week, until about the middle of April, then turned to pasture, and the next winter fed on hay in the field, without shelter."

They did not, at the time of my purchase, present the appearance of being cattle of uncommon excellence, but were considered as fair, average steers. They were domesticated, broke to the yoke and worked till near five years old. They were always good workers, but were never put to any very severe labor.

Their keeping while thus at moderate work, was not more than I usually give to my working oxen or other stock. They received hay, with a small quantity of grain from March, till they were put to grass, but the improvement made under this treatment soon evidenced that they were superior animals, and such was their promise, that, in the winter previous to their coming five years of age, they were high fed, and then in the summer afterwards, moderately fed with grain, about 6 to 8 quarts of meal each per day. For one year after 1st November, 1846, and until the time that I sold them, I gave them the best keeping that could be furnished, making the whole time of feeding about twenty-one months.

The last year of that time, they were kept at the barn on dry feed, averaging about 12 or 14 quarts of meal each, with some carrots, potatoes, pumpkins, &c., and to sustain their appetite in vigor, sometimes ground barley was used, and oats and corn, and sometimes clear corn meal, changing from one to the other. Great care was taken in the quality and preparation of this corn meal, indeed so far as to have some of the corn kiln dried.

The cattle were never stabled, but usually put up to receive their food, and then exposed to the season with more or less of shed protection. To a roomy yard, with the ground to stand or lie upon,

instead of confinement upon a stable floor, I attribute the great activity and sprightliness of the cattle when at their perfection. Although remarkable for expanding in size, and taking on fat, they were never, what could be called, great eaters.

I purchased the steers in the fall of 1843 for the sum of	$60 00
I kept them for work 2¼ years, but as their work was not severe, and they only received the ordinary keeping of my stock, I estimate the expense of keeping over work, at 4s. per week for 2¼ years,	65 00
I then commenced feeding them, and for ¾ of a year, fed but moderately—say, what equals in expense 8 quarts of corn meal for each per day—being ½ bushel corn per day for 274 days, making 137 bushels at 4s. per bushel,	68 50
Add hay, grass and attendance 8s. per week,	39 00
For the last year, I fed them in the best manner—say corn, oats and barley meal, about 12 quarts each per day, and some pumpkins, potatoes, and carrots, equalling in expense one bushel corn per day—being 365 bushels, at 4s. per bushel,	182 50
Hay and attendance 8s. per week,	52 00
	$467 00

This at a liberal estimate, was the cost of the cattle when sold I sold them in November, 1847, for $550 paid down, and a promise from the purchaser, Mr. Calkins, of $100 more, if the cattle turned out well—which promise he has since agreed to make good.

I annex a copy of a certificate given by over one hundred butchers and cattle dealers, and the purchaser, who saw the catttle in New-York, and certify as to their fine qualities.

Very respectfully yours,

ALLEN AYRAULT.

Certificate of one hundred and six butchers, drovers, and persons judges of cattle.

This is to certify, that the undersigned, butchers, drovers, and persons conversant with, and judges of the best cattle produced in this market, take pleasure in stating, that the Genesee Valley Twin Steers, raised by the Hon. Allen Ayrault of Geneseo, Livingston County, New-York, are the best pair ever exhibited in this market. And we further take pleasure in stating, that the price obtained for said steers far exceeds any price ever obtained for a pair of cattle at this market before, by several hundred dollars.

GEO. W. ALLERTON,
JAMES CRAWFORD, and 104 others, and
BRYAN LAWRENCE,

Purchaser.

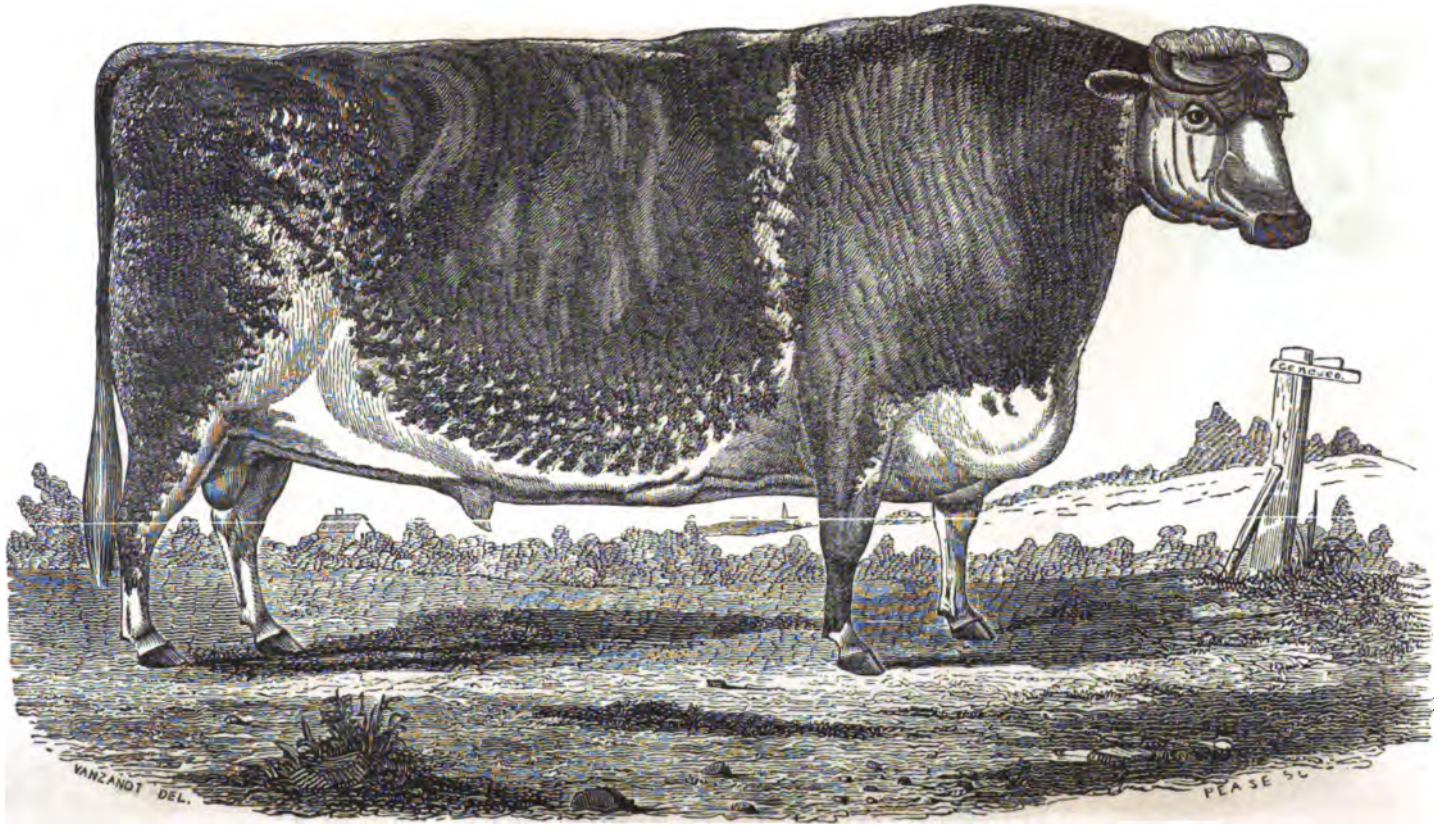
Bull's Head, New-York, Jan. 8th, 1848.

LY

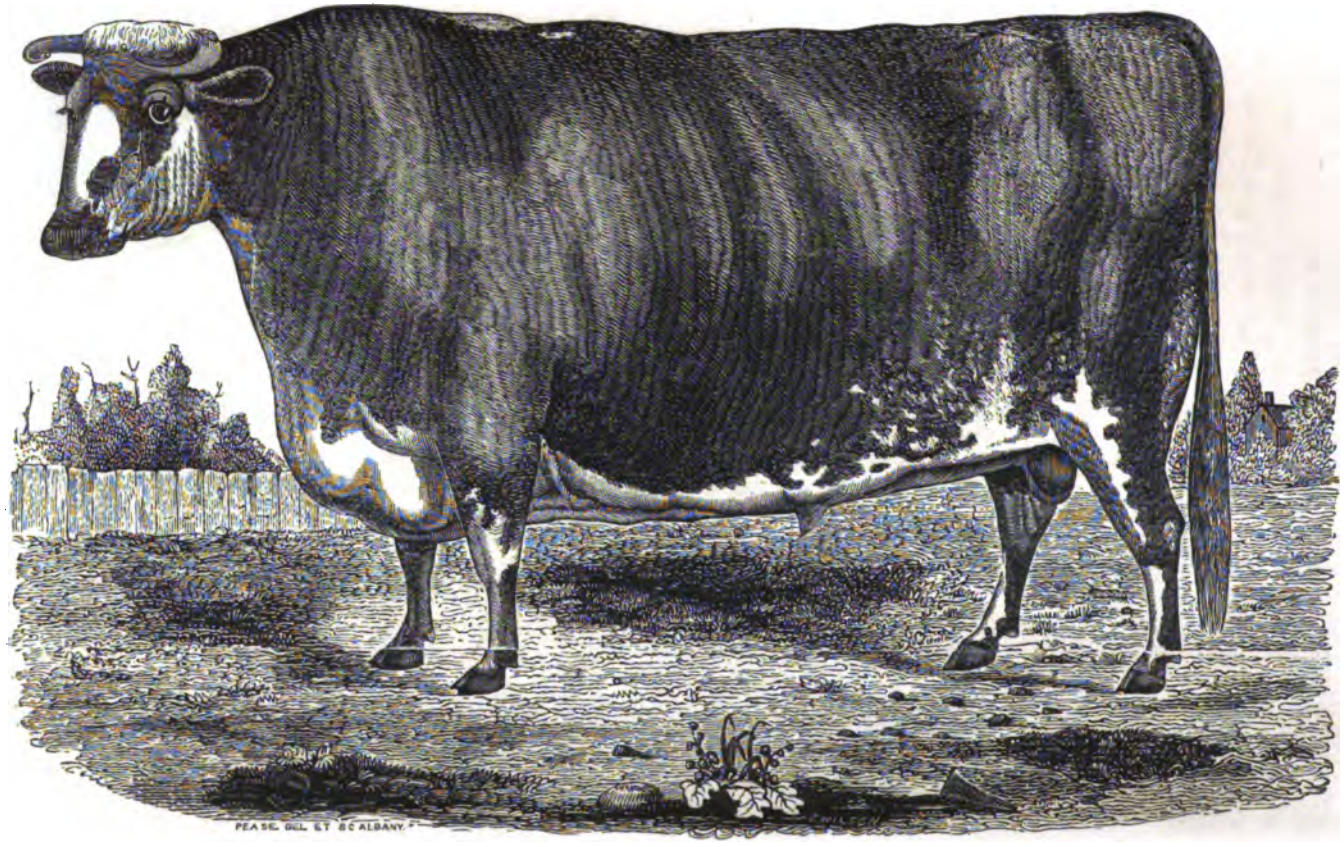
ons

er-
his
vin
ion
et.
for
ttle

and



Mr. AYRAULT'S STEER, 5 years old, 3-4ths Short Horn.



Mr. AYRAULT'S STEER, 5 years old, 3-4ths Short Horn.

CONSTRUCTION OF FARM COTTAGES.

BY D. J. BROWNE.

It has been justly remarked, that, a traveller, in passing through a strange, but civilized country, might form a correct judgment respecting the social condition of its rural inhabitants by observing attentively the state, character, and general appearance of their dwellings; and that, a clean, fresh, and well-ordered house exercises over its inmates a moral no less than a physical influence, and has a direct tendency to make the members of the family sober, peaceable, and considerate of the feelings and happiness of each other. Nor is it difficult to trace a connection between habitual feelings of this sort, and the formation of habits of respect for propriety, for laws in general, and even for those higher duties and obligations, the observance of which no laws can enforce; whereas, a filthy, squalid, unwholesome dwelling, in which none of the decencies common to society, even in the lowest state of civilization, are known to exist, tends directly to make every dweller in such a hovel, regardless of the feelings and happiness of each other, selfish, and sensual; and the connexion is obvious between the constant indulgence of appetites and passions of this class, and the formation of habits of idleness, dishonesty, and even of crimes of higher degrees.

Thus, in travelling over the wide domain of the inhabited parts of the United States, one can judge, in a measure, of the character of the people by what is written in the expression of their dwellings. On leaving any of the Atlantic cities and progressing inland, he first passes through the motley and sometimes squalid suburbs, which chiefly owe their existence to the late unparalleled prosperity of commerce, the progress of manufactures, and their two indispensable comcomitants—internal improvements and foreign immigration. Here, we may see cottages of every grade, color, and finish, which fancy, caprice, or carelessness might devise, with now and then, at the interval of a few miles, a stately mansion, in imitation of some purse-proud lord; or, on the brow of yon eminence, there may be seen a castle-like structure

"Embosomed high in tufted trees,"

reminding him, almost, that he is surrounded by the feudal oppressors, who long made sorrowful the homes of the Old World. As he advances onward, the road-side cottage, or diversified farm house appear in every direction, often accompanied by its appropriate garden, orchard, and green; while, occasionally, he meets with the sweet rural village, the houses of which have sprung up by degrees, in detached groups, and arranged after no particular plan, with its rivulet and mill—its gardens and trees—its smiling pastures and green shady lanes, enlivened with poultry, cattle, and sheep, all of which awaken images of security and peace, cleanliness and health.

Again, as he proceeds, the eye of the observer is forcibly impressed with the more recently-built village, or larger town, projected on a regular, though less pleasing plan, with its right-angled streets, long rows of cottages, numerous churches, school-houses, factories, &c., evident marks of the industry, thrift, and "go-ahead-ativeness," of its people. And, as he reaches the more remote and thinly inhabited interior, his attention is arrested, now and then, by a neat log cabin, with its large and commodious barn, erected on a handsomely cultivated spot in the midst of a forest, or a prairie, showing that he is in a land lately reclaimed from nature, by the exertions of the immigrant, perhaps, from a foreign clime. To this bright picture, unfortunately, there are many, far too many, exceptions, particularly in a country where well directed labor will generally, more than contribute to the support of the artisan, when due economy and sobriety are observed. Without entering into a description of the habitations composing the squalid outskirts of almost every city, or populous town, or the wretched hovels, which line our public works, or those which poorly subserve the wants of the squatter, or trapper of the west, we have not far to go to witness hundreds of dwellings constructed on no definite principles, either as regards taste or comeliness—comfort or convenience; and it is much to be regretted, no matter who may have been the cause of thus corrupting public taste, that the mania should have prevailed in this country for some years past, for building Gothic castles, with "pie-crust battlements," and gloomily painted in imitation of dark brown stone; or for erecting fantastical and puerile "bird cages," with gew-gaw carvings and other like follies, for the habitations of civilized beings. It is not unfrequent that we find these "erections of fancy," completely embosomed in a thicket of trees, with their walls dampened and darkened full six months in the year; and even in the country where land is cheap and abundant, we often meet with detached cottages, built in imitation of street houses in town, with

the kitchen and living room in a basement, half under ground, throwing the fumes of the scullery, or wash room, into the parlor and other apartments above. Other things equally absurb, migh be pointed out, would the limited length of this paper permit, with regard to position, ventilation, light, heat, color, incongruity of materials, and internal arrangements, which are totally incompatible with republican principles, comfort, true taste, or common sense.

The main causes of the afore-named inconsistencies, are, that most of the houses in this country have been planned by persons who never have studied the first principle of domestic architecture, such as builders, carpenters, masons, bricklayers, &c ; or they have been designed by professed architects, in the common acceptation of the term, who may have turned their attention almost exclusively to the construction of public buildings, villas, baronial mansions, street houses in town; and have been reared in the rigid school of European precedent, if in any, imbued with prejudices at variance with the simplicity of our manners, our climate, reason, or sound taste.

It is unnecessary to dwell further on the moral, physical, and mechanical defects in our rural architecture, as it must be obvious to every reflecting and well-balanced mind, that serious and growing evils do exist, which loudly call for reform, and it is ardently hoped that the suggestion will not have been made in vain. And now to the immediate object before us.

In the construction of a farm cottage the chief objects to be considered, are, 1st, the number and character of the people it is intended to accommodate; 2d, the expense, or present means and prospective ability of the proprietor; 3d, the position, in regard to exposure to the sun, and in affording convenience to the out-buildings, or other parts of the farm; 4th, consistency, or congruity, so far as it is considered as an object in landscape scenery, or relates to the nature of the materials of which it is constructed, the color and finish of the exterior, and its fitness or adaptation in promoting health, comfort, and cheerfulness to the occupants within.

Those who possess but moderate means, and are unable to erect a more costly mansion, may build, in many situations, a very comfortable and convenient dwelling, for from $600 to $900, agreeably to the plans and elevation denoted by the adjoining cuts.

Description.—The main body of the cottage, fig. 2, is in the form of a parallelogram, 34 feet long, including the portico, and 32 feet wide, having 14-foot posts, 2 feet of which extends above the attic floor, sustaining a roof of a 16-foot pitch, with the gable-end facing the south or south west. The back part of the house, which extends to the kitchen, is 18 by 23 feet, including the verandah, with 10 foot posts, supporting a roof of a 11½-foot pitch, with the gable towards the north or north east. The kitchen is 12 by 23 feet, including the passage to the vault, with 6-foot posts and a lean-to roof having a 4-foot pitch.

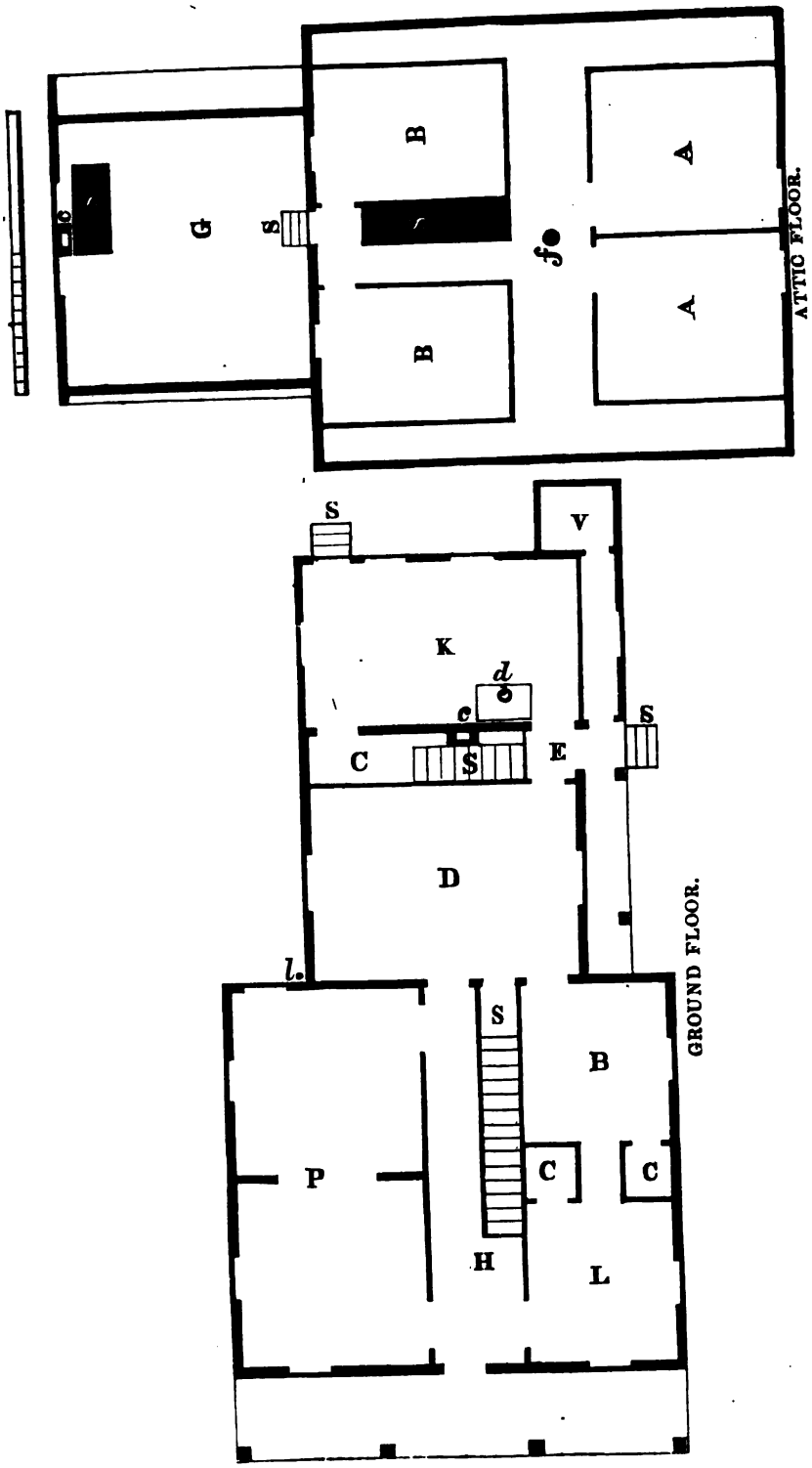
The whole building is designed to be elevated on a terrace, or mason work, 3 feet above the common level of the ground, to be built of wood, with the outer walls lined with bricks. The roofs, also, are designed to be built of wood, covered either with common shingles, or water-proof cement.

On the centre of the main body of the house, a false chimney top is shown, which may be formed of metal, bricks, or artificial stone, for receiving the stove pipes from the rooms below. Those who prefer fireplaces to furnaces, or stoves, can erect a chimney at each side of the cottage, extending their tops about 16 feet above the eaves. Between the dining room and kitchen, there is a chimney designed to communicate with the cooking range and stove in those parts of the house.

This cottage is designed to be entered from the front gate through a portico, 6 feet wide, extending across the whole width of the house. The entry of the kitchen and dining room is also designed to be passed into on the easterly side of the back part of the building, through a verandah, 3 feet wide.

The windows are all designed to be of good dimensions, and protected by wooden blinds. Towards the top of each gable end, there is a latticed window for ventilation, which may be closed at pleasure in stormy weather.

Under the entire floor of the main body of the house, a cellar is intended, with walls and arches laid in cement, to be entered by stairs from the dining room, and by a 6-foot door way, on the easterly side, from without. Beneath the kitchen, there is also another cellar, designed for storing wood or coal, entered from the kitchen through a trap door, and likewise by a passage, on the easterly side, from out-doors. If circumstances require it, a dairy, or milk cellar, may also be constructed under the dining room, and lighted, or ventilated, by windows at each side of the house.


ATTIC FLOOR.
B
A
A
B
G
S
e
f
GROUND FLOOR.
S
V
K
d
c
S
C
S
E
D
l
S
B
P
C
C
H
L

PERSPECTIVE VIEW OF A FARM COTTAGE.

The whole building is designed to be protected from lightning by a half-inch copper rod, 48 feet in length, erected at the gable end near the back parlor window, and secured in its place by means of wooden props, extending from the roofs.

Ground Floor.

H, denotes the front lobby, or hall, 7 feet wide, including the front stairs.

P, a double parlor, 14 by 28 feet, with folding doors, communicating with the front lobby, or hall. Either, or both of these parlors might be used as sleeping apartments, should circumstances require.

L, a room, communicating with the front lobby, or hall, 11 by 12 feet, with a closet 4 feet square, and may be used for a library, office, living room, or nursery, according to the taste or wants of the occupant.

B, a bed room designed for the head of the family, 11 by 12 feet, with a closet 4 feet square, and communicating with the library and dining room.

D, the dining room, 14 by 20 feet, communicating with the front lobby, H; the back entry, E, and the cellar at S.

K, the kitchen, 12 by 20 feet, communicating with the dining room by the back entry E, and a sliding window in the pantry C; with the wood cellar at *d;* and the back yard, by the steps S.

E, the back entry, 4 by 4 feet, communicating with the verandah, kitchen, dining room, and the back-garret stairs.

V, the vault, 5 by 6 feet, communicating with the verandah, by a passage under cover, 3 feet wide.

C, C, C, closet, or pantries.

S, S, S, S, stair ways, or steps.

c, kitchen and dining-room chimney.

d, trap door, covered the wood-cellar stairs.

l, the lightning conductor.

Attic Floor.

A, A, denote two front bed rooms, 12 by 14 feet, entered independently of one another, from a lobby, 6 feet wide.

B, B, two back bed rooms, 10 by 14 feet, entered, also, independently of each other from the lobby at the head of the front stairs.

G, a back garret, communicating with the front part of the attic by a door at the steps S, and serves as a passage way to the kitchen and verandah, by the back stairs.

S, S, S, denote stair ways, or steps.
c, the chimney of the dining room and kitchen.
f, the stove funnel, communicating with the rooms below.

Between the wall plates and the bed rooms, spaces are left 3 or 4 feet wide, which may be found convenient for storage, &c.,

The reader will bear in mind that the dimensions of a house, built on the foregoing plan, may vary in size, or may be constructed of bricks or stone, as may best suit the taste, ability, and wants of the occupant; but the position, in regard to the sun, and the general arrangement, may be the same. A dwelling of this kind, let it be remembered, is not designed for a city, or village, where the buildings are prescribed in their limits, the architectural style of which, in order to break the monotony often observable in our larger towns, should be displayed in single and double cottages, neat and appropriate out-buildings, factories, churches, and other public structures.

For the guidance of those who have not given much thought to the subject, the following brief, though incomplete maxims on the construction of farm cottages, are offered, with a view of showing how far this important branch of rural economy has been neglected, or abused, in this country, and of calling out taste and talent for future improvement, or correction:—

1. It is recommended, that the diagonal line of the ground plan of a farm house be always in the direction of north and south, so that each of the four sides of the building may have, in the course of the day, the benefit of sunshine and shade.

2. It is preferable, that the gable end should present itself towards a public road, rather than the sides; but the position with regard to the sun should not be sacrificed for this. A detached cottage, thus located, may be advantageously seen at a considerable distance, perhaps, from every direction, offering a more pleasing appearance to the traveller as he passes along.

3. A cottage raised on a platform, or terrace, is more cheerful looking than one, the floor of which, is on, or below, the level of the highway.

4. The grounds surrounding a farm house may be ornamented in various ways by means of trees, flowers, and shrubs, giving a beau-

tiful effect to the landscape, and contributing, also, to the health and comfort of live stock. For instance, a sheep walk, or pasture, situated side of a farmery, may be so planted with scattered groups of oaks, maples, locusts or elms, and clumps of cedars, hemlocks, and pines, as to present all the beauties of the lawn, and, at the same time afford protection to the animals by shelter and shade. By intermingling fruit trees, flowers, and comely shrubs about the garden and hedge rows, with a beautiful fountain of living water in the vicinity of the buildings, will add greatly to the ornament, luxury, and comfort of every farm.

5. If fancy buildings are to be erected on a farm, different kinds of style may be employed; but in no single building should two or more styles appear. Thus, a Gothic cottage should be purely Gothic throughout; for, a structure of this sort would look exceedingly awkward under a fair-projecting Italian roof. In like manner, a Swiss cottage presenting to view Grecian lines and forms, in any way, would be quite as much out of place. As a general rule, however, the appendages, or out-buildings, to a farm-house, should partake of the same architectural character as that of itself; but cases may occur wherein it would be advisable to depart from this rule.

6. A landscape gardener, possessing a rational and discerning taste in making a design, will adopt such a style as will best produce a scenic effect. For instance, in a situation, backed by a rugged precipice, with straggling hemlocks, or other evergreens near by, approached, perhaps, by a rustic wooden bridge, thrown across a deep ravine, with no other dwellings in sight, a cottage built in imitation of a Swiss hermitage, would form a pleasing variety in the train of ideas that might run through the observer's mind. Again, in a location on a river bank, or hill side, with a dark back ground, and viewed at some distance from before, a structure in the form of a Grecian villa, would produce a desirable effect.

7. Costly and fantastic ornaments are considered quite out o taste in embellishing a farm cottage. A picturesque neatness and simplicity should be aimed at, rather than whimsical and childlike designs. It is not in good taste to place on buildings of this class, turrets and battlements, in imitation of pointed Gothic and old Scottish baronial edifices; nor to adorn them with painted windows, nor sacred and profane subjects, which can only be associated with the dark ages of ignorance, sorrow, and oppression. Neither is it in

good taste to erect expensive columns, pilasters, and entablatures against a cottage of this kind, in the style of the temples of the ancient Greeks.

8. A wooden or mud-walled cottage, covered with a tiled or slate roof, is at variance with congruity; because the walls are constructed of less durable materials. On the other hand, walls built of brick, or stone, supporting a roof of wooden shingles, or thatch, are equally at variance with consistency and sound taste. So it may be said of rustic wooden pillars supporting solid mason work, as well as of stone pillars sustaining nothing but wood.

9. The color of a farm cottage should be such as will be the most pleasing to the eye, and produce at the same time the most harmonious effect in landscape scenery. In general, light, warm tints of various kinds, are to be preferred, such as straw color, yellow, reddish brown, lead color, and where a strong contrast is desirable with the back ground, chocolate color, or white. A safe rule to be observed by those who practice this art, is to paint every object in such a manner as will show at once the materials whereof it is composed—whether they be wood, plaster, iron, bricks, or stones.

10. An architectural expression may be given to cottages by projecting bases and wall plates; and an architectural style may be conveyed by the forms of the mouldings in window frames, door pannels, chimney tops, &c., and in general, by the lines, angles, and forms of the windows and roofs.

11. Every cottage should contain a verandah, portico, or entrance porch, contiguous to the entry, lobby, or hall; for, a porch, or verandah, shelters the entrance from wind, snow or rain, besides adding comfort to the interior. In constructing an open portico or porch, the floor may be paved with tiles, or flag stones, and the ceiling, if there are rooms above, should be plastered and overlaid with mortar, or cement, to keep out the cold.

12. Verge boards, or wind skews, which are confined to the gable ends of cottages, for preventing the wind from displacing the materials of the roof, are more expressive of their object when formed of plain mouldings, than when they are weakened in appearance by childish carvings,

13. The windows of a cottage, when made large and high, with clear glass, give an expression of cheerfulness in the interior, partic-

ularly when they rise nearly, or quite up to the cornices of the rooms, and a proper state of ventilation is produced. In order to facilitate this, the upper portions of the sashes should be made to draw downward from the top. Latticed windows, or those having blinds, are cheerful and picturesque, but they are sometimes so constructed, as to be ineffectual in keeping out wind and rain. Blank windows are deceptive objects at best, and are never resorted to as expedients for producing symmetry and effect by designers whose taste is governed by the dictates of reason.

14. High and massive chimney tops, in a cold climate like ours, give a cottage an appearance of cheerfulness, because they are associated in the observer's mind with the glowing grates and comfortable firesides within. They should always rise boldly out of the roof, so as to give symmetrical effect, and maintain, at the same time, a conspicuous place. As various kinds of iron stoves, grates, and ranges are manufactured, and may be had at a moderate cost, the old-fashioned fireplace is generally dispensed with, except in certain parts of the country, where wood is plentiful, and mineral coal is not to be obtained. Besides, a great portion of the heat generated in a fireplace is absorbed by the mason work, and is wasted in the open air. If a fireplace be adopted at all, it should be formed in an interior wall and in a central part of the building. *And in no case, if it can be avoided, should a door way, opening into a room, be near to, nor on the same side of the apartment with the fire place, or stove;* for it is well established, that, a door situated so as to open hard by a fireplace, destroys in a great measure, the comfort of the room.

15. The kitchen, which is a most important appendage to every farm house, should be large, high, well lighted and ventilated, and should be placed near by, but not under, nor directly adjoining the dining room; nor should it be placed under, or contiguous to any other part of the main body of the house, where the inmates would be annoyed by its heat, or fumes. The kitchen floor should be covered with fire-proof materials, as metal, bricks, tiles, or stone. The kitchen, or wood cellar, should also be provided with a brick oven, and a pump and sink, with proper drains for conveying off the wash.

16. One or more pantries are requisite in every cottage, and should there be but one only, that would be most convenient between the dining room and kitchen.

17. To every farm house, one or more cellars are indispensable, which should be kept dry, cool, and well ventilated in hot weather, and warm and secure from frost when it is cold. The walls should be well pointed with mortar, and during mild and warm weather, the windows should be left open, and protected by wire-cloth screens from the invasion of vermin, or rats.

18. Bedrooms should be entered independently of each other, from a common passage, and when separate, especially when reached by a stair case, are conducive to health and habits of cleanliness. In all cases, they should be well ventilated, and if this cannot be effected by external windows and doors, sliding windows, concealed by curtains within, may be constructed in the partitions, or interior walls.

THE CULTURE OF THE POTATO.

BY JAMES ANGUS.

T. B. WAKEMAN, ESQ.,
Corresponding Sec'y. of the Am. Inst.,

Sir—I beg leave to transmit you the following in reference to the subject of the potato.

The potato is justly entitled to pre-eminence in the list of esculents, generally cultivated for culinary purposes. It is too well known and too highly appreciated to require any recommendation in this place; all that I would attempt on this occasion, is merely to state my own individual experience, and to recommend such modes in the cultivation of this invaluable root, that I consider the most practicable and successful in their results.

In Scotland where I was brought up, the potato was cultivated on a very extensive scale, until the recent failure. I lived for some time with a farmer in the immediate vicinity of Glasgow, who planted from 40 to 50 acres yearly, and they were generally of a very superior quality; the mode of culture adopted on the farm and on farms in general in that section of the country, was as follows: the oat stubble was plowed in, in the fall or the early part of winter; and early in the spring, say last of March or the first of April, the ground was well harrowed, and then cross plowed, and harrowed again; which being done, the plow was employed to mark out rows about 12 feet apart, along which the manure, (which was generally well rotted,) was placed in cocks about the same distance apart as the rows; and when a sufficient number of rows were completed for one or two days planting, it was done in this way. A man with a two-horse plow opened the drill and covered the potatoes; eight persons were required to keep pace with the driller; four spread the manure, and the other four planted the potatoes; in this way from two to three acres were generally planted per day. The potatoes used in planting, were generally the largest and the best, which were cut so

as to leave one or more eyes in each cutting; in regard to their subsequent treatment, just about the time the shoots began to make their appearance, the drills were harrowed down with a pair of small concave harrows, which covered two drills and were guided by the driver behind. During the growing season, they were generally hoed twice, being preceded each time with the horse-hoe between the rows. A harrow (something in the form of the cultivator used in this country,) was employed after each hoeing; and finally a double mouldboard plow was used in earthing them up; all this was done in the most regular and systematic order, the cost of labor being considered of little consequence, where it could be obtained so low, and with such good advantage. I have taken the liberty of stating the foregoing as the result of my experience, and observations on the other side of the Atlantic, in regard to the cultivation of the potato; from a conviction that a mode somewhat similar might be practiced to a good advantage in this country.

I now take the liberty of stating to you, my experience in this branch of husbandry in this country last year, and which I am happy to say, was attended with the most favorable results. I planted between 10 or 11 acres with Mercers, (which I always considered the most profitable,) which yielded over 1,800 bushels; two thirds of the seed were small, planted whole; the rest were large which I had cut, the small contained about one third of a mixture of different sorts. The Mercers were all good, but the others were very poor, which caused a smaller yield than would otherwise have been realized. The lot in which they were planted, was of a light dry nature, and lies in an open and elevated situation; it was cropped with oats the year previous, and plowed twice in the fall; and in the spring when the ground was sufficiently dry, we spread the manure (which was principally from horse stables well rotted,) broad-cast and plowed it. We then drilled and planted the potatoes somewhat similar to the way I have described above; opening the drills one way, and covering the potatoes the other. A bush was employed in levelling down the drills when the tops began to make their appearance; and previous to hoeing we had them well worked with the cultivator. But owing to the rapidity of their growth and other things requiring our attention, we only hoed them once; but had them well earthed up, which I consider of great advantage to this vegetable; a superabundance of moisture being detrimental to its growth, and the quality of the tuber.

In regard to the *rot* which has been the subject of much scientific research, and theoretical speculation on both sides of the Atlantic, I may be permitted to state my opinion which will be found to correspond with the sentiments of some of the most practical and intelligent agriculturists that have been published to the world on the subject. I believe that the action of the atmosphere in peculiar seasons, and under certain circumstances, is the sole cause of what is generally termed the "potato disease." It is unnecessary to say that the same cause is attended with similar results on other vegetables in certain seasons; this is well known to every cultivator of the precious fruits, and products of the earth. I fondly flatter myself that the potato will thrive and flourish, so as to equal if not surpass any former year of its greatest plenitude; but even now under existing circumstances, I think the evil might in a great measure be evaded. From my own experience and observation, I have come to the conclusion, that in order to have good potatoes, they require a dry soil, early planting, and the incorporation of the manure with the earth, instead of the usual way of placing the potato in direct contact with it.

The tops of our potatoes died the same time those of our neighbors did; but, being planted early, the tubers were matured before the disease overtook them; a few of those last planted, were fresh and luxurious at the time, but soon presented the appearance of having experienced a severe frost; they were also much inferior in quality to those first planted, and had a tendency to rot while the others were entirely free from it. I may also mention that there was a wet corner in the lot, in which they nearly all rotted.

I would recommend letting the potato remain undug, until the usual time; I think that digging them at that season of the year, and exposing them to the open air, and then burying or housing them is an injudicious practice, they keep better in their own native bed until the usual time of lifting them, than any other way they could be kept. I have about a half bushel very choice ones I treated n this way, and they nearly all rotted.

I planted a few slips for experiment, which succeeded remarkably well; they did not turn out quite so numerous as the others, but of a larger size; this mode might be adopted in seasons when seed is scarce.

I have carried these remarks to a greater length than I intended when I commenced, but the importance of the subject requires all information that can be obtained respecting it; and if you can gather any thing from the foregoing that will be of advantage to you, my end will be gained.

Yours respectfully,

JAMES ANGUS.

West-Farms, Feb'y 9, 1848.

NATIONAL CONVENTION

OF

FARMERS, GARDENERS AND SILK CULTURISTS.

OFFICIAL PROCEEDINGS

Of the National Convention of Farmers, Gardeners and Silk Culturists, held on the 11th, 12th and 19th days of October, 1847, in connection with the Twentieth Annual Fair.

The NATIONAL CONVENTION OF FARMERS, GARDENERS AND SILK CULTURISTS, organized at Mechanics' Hall, Broadway, New York, on the morning of Monday, October 11, during the first week of the twentieth Fair of the American Institute. There were large numbers of Delegates and other interested spectators present.

Col. EDWARD CLARK was chosen Chairman, and A. C. Van Epps Secretary *pro tempore*.

Soon after convening, Prof. MEIGS read the Call, detailing the objects of the Convention. It is as follows:

"Subjects for the consideration of the National Convention of Farmers, Gardeners and Silk Culturists, of the greatest national interest, will claim its attention.

"The due protection of American Industry—a system of Internal Improvement—an Agricultural Department of the General Government, to watch over and foster this precious interest, conformably to the earnest recommendation of General Washington to Congress and the people of the United States over fifty years ago.

"More general attention is demanded of our people to the preservation, in their purity, of the best breeds of Cattle, Horses, &c., especially Sheep, so that our skilful, manufacturers, to whom all praise is due, may not be compelled to resort to European markets for the materials of fine cloth.

"Wool and Woolens occupy a large space in the Commerce of the world; beside, in our climate woolen fabrics are indispensable to our comfortable existence. Samples are requested from different States, particularly from pure bloods. The Institute will provide some of the best specimens from Europe, that comparisons may be made. Samples from flocks which have been longest in the country, will enable us to judge whether the climate has deteriorated or improved its fineness and value, and also indicate the most favorable portion of our country for growing this great staple.

"The establishment of Colleges and Schools in the States of the Union, for teaching practical Agricultural knowledge, will also claim the attention of the Convention.

"Within the last forty years, by the application of Science to Manufactures, the principal clothing of our people has been produced by less than one half the labor which before that time was required. Who can say that the severity of Agricultural labor might not have been mitigated in proportion, if the farmer had appreciated the power of knowledge which, unfortunately, too many have contemned and derided; but an awakening spirit has gone forth, and examples of bountiful crops, cultivated under the direction of science, united with experience, have staggered the most incredulous.

"The condition of the Linen Manufactures of our country; what has has caused them to languish, and the practicability of their success, forms another subject of enquiry.

"To the Silk Culturists, who will compose an important part of this Convention, we shall look for the causes which seem, in some measure, to have temporarily retarded the rapid progress of silk, contrary to the high hopes heretofore so almost universally entertained. The Institute has always believed, that with experience and a proper application of skill and industry, fostered in its infancy by wise protecting laws, it cannot fail of becoming one of the great staples of the country.

"Silk culturists are desired to continue their answers to questions submitted at any former Convention by letter if they cannot attend, that the public may have the benefit of any new facts or important experiments of the last year.

"Facts are wanted in relation to the Potato Disease, to enable the Institute to answer inquiries made by the Royal Central Society of Agriculture of France, and other Societies, whose indefatigable investigations are still directed to the causes and the remedy for this appalling disease."

The first business of the meeting was the appointment of a Committee to take the names and residences of those Delegates present, and on motion of Col. Clark, the same committee was deputed to nominate Officers. The gentlemen appointed were Messrs. Wakeman, Pierson and Jackson.

The Committee then withdrew to deliberate.

Meantime Prof. Meigs read a translation, by himself, of a portion of a *Brazilian* work treating of Agriculture and of the establishment in that region of an Institution very similar to the American Institute. Mr. M. prefaced the reading with a few remarks expressive of his true sense of the true aims and the progress of Agricultural Science. He thought the paper he was about to read contained the soundest philosophy, expressed in the best manner, relative to the principles of Agriculture. The Institution is indebted to M. D'-Aguiar, the Consul of Brazil, for the city of New-York, for the copy of *O Auxilidador da Industria Nacional*—published at Rio Janeiro in June, 1846, from which the following is extracted:

[*Translations.*]

"WHAT IS AGRICULTURE?"

"It is the sublime art of cultivating the earth and causing it to produce all the plants, grains and fruits necessary for the use of man; and there is with it, also, the multiplication and preservation of all the principal domestic animals. It is the primary and most useful of all the Arts. It is the condition of things most comfortable to Nature and to reason, the art of deriving from the bosom of the earth our aliment and clothing. What is more noble—what more

grateful to a susceptible mind, than those wonders and treasures of Nature, proving the grandeur and the goodness of God? The laborious cultivator, in the midst of his numerous family, passes serene and happy days, unknown to those who are ambitious to locate themselves in cities, where life is a chaos of agitation and bitterness. The Brazilian farmer ought to devote himself to it with constancy and fervor; he is in the midst of immence riches, surrounding him on every side; he is on a virgin soil of vast fertility, and yet poor and wretched are the efforts made generally to avail themselves of these peculiar advantages. Civilized countries have made an immense progress, the rich and the learned have already become zealous to dedicate themselves to Agriculture, the first of arts. Fine Schools have been founded, in which the theory and practice of Agriculture are taught. Scientific societies are occupied with the subject and are encouraging and protecting it, giving premiums to inventors of new processes and to such as are ahead in Agricultural labors."

INSTRUCTION IN SCIENTIFIC AS WELL AS PRACTICAL AGRICULTURE.

History teaches us that in all the modern nations which were formed out of the dismemberment of the Roman Empire, little care was taken of Agriculture, until about the middle of the eighteenth century. In all that long space of time we meet with no institutions devoted to Rural Economy, or to any of the ways and means indispensable to its progress—neither roads, canals, machines or any means of transportation adapted to the benefit of the laborer in the soil, its culture, preservation of its fruits, rural architecture, stock, or any useful animals.

War, which isolated states and nations, is one of the causes of the vast injury to agriculture in our modern ages.

Peter the Great, of Russia, visited Europe to learn, and with a view to teach the civilized arts. He established systems for naval architecture, &c., but he never concerned himself with the examination or the teaching of the Art of Agriculture, which is, was, and ever will be, the primary, indispensable art to the prosperity of states and nations.

In France, the Abbe Desfontaines, in 1740, translated the Georgics of Virgil, and complained of the difficulties he experienced in ex-

pressing—except in prose—the low, base arts of Agriculture; while he admitted the power of the French language to display the prose and poetry in Didactics, Music, Painting, Navigation, War, &c., &c. Such was the opinion of literary Frenchmen, while more than a century before that time Leonel da Costa had made a beautiful translation in verse of Virgil's Georgics, with excellent notes. So that we may apply to France the same opinion which Columella, (nearly 1800 years ago,) applied to the Romans, (viz:) "We meet every where schools for teaching Music, Painting Geometry, Rhetoric, trifling of all sorts, Horsemanship, but as to the cultivation of our fields, we meet no where with either teachers or scholars.

In 1774, in the Kingdom of Bohemia, a catechism of Rural Economy was adopted, and was introduced into every school where reading and writing were taught. And the following thought was well expressed in it: "This catechism is introduced into our country schools in order that our farmers may gain a habit of reasoning on all things belonging to Agriculture, and learn to unite the theory of Agriculture with its practice." The King of Denmark followed th example of Bohemia.

Europe generally owes much to the Empress Maria Theresa for agricultural institutions created by her in Germany. She established in 1770, a chair of Political Economy in Milan, and charged it, (among other things,) with Rural Economy.

In 1771, Christiernia, a Lutheran priest, was promoted to a chair in the University of Upsal, in Sweden, and in his opening address broke out in invectives against Rural Economy, calling it the vilest of all arts, that clergymen debased themselves by studying it, that it profaned sacerdotal dignity. Christiernia was as bitter an enemy of Linnæus as Anytus formerly was of the learned Socrates. This doctrine of the priest was very offensive to the workers of the land, and contrary to the intuitive views of the Government, a General Assembly was called, and a very energetic memorial presented against Christiernia, declaring that his doctrines were perfectly absurd and contrary to all the true principles on which the prosperity of the state depends, that it was the duty of Government to protect Agricultural institutions, &c., &c. Christiernia was condemned to repair the injury he had done, and to teach his scholars truths entirely opposite to his errors; and the King Gustavus third declared that Agriculture was the first of all arts, and that next to the sacerdotal functions, it was the most honorable of all, and that Ecclesiastics ought to teach both by words and by example the practical exercise of

Rural Economy. This declaration of Gustavus proved to be the basis of Agricultural progress in modern Sweden.

In Portegal, on the 26th of November, 1763, Count Polacco Miguel Maiszech offered to an Agricultural Society a gold medal, having on one face, *Hinc Felicitas*, ("Hence comes Felicity,") and on the other, *Civi Optimo*, ("To the best Citizen,") to be given to him who should present the best memoir on the following question: "What ought to be the spirit of Legislation, to animate Agriculture, Arts, Manufactures and Commerce?" Twenty-five memoirs were presented in competition—four of them were published in 1765, and are the most precious collections of that society, meriting the study and consideration of all legislative bodies."

Mr. Meigs here suggested that *each* subject before this convention should have a committee of three to determine what should be done.

Mr. Wakeman thought it would be improper to proceed to that kind of business until the convention itself had time to consider. Its members could then adopt what cause of action they preferred.

Mr. Meigs agreed with the latter gentleman, and withdrew his motion.

Here the first committee (on business) returned and reported.

There were representatives from eight States of the Union. They, and the Officers chosen, were as follows:

President—MAHLON DICKERSON, of New-Jersey.
Vice Presidents—Col. EDWARD CLARK, of New-York.
WILLIAM PIERSON, of New-Jersey.
SAMUEL LEWIS, of Ohio.
Secretaries—A. C. Van Epps and Augustus Maverick, of N. Y.

Delegates:

John S. Pierce, Burlington, Vt.
Henry L. Farnum, East Poultney, Vt.
Samuel Church, Bethlehem, Conn.
M. Ellsworth, Windsor, do.
J. B. Blakesley, Watertown, do.
Jonathan L. Wells, Northampton, Mass.
Col. Edward Clark, Brooklyn, Long Island.
Wm. Covert, Williamsburgh, do.
Nicholas Wyckoff, do do.
B. P. Johnson, Sec. State Ag. Society, Albany, N. Y.
Henry Meigs, New-York city.
T. B. Wakeman, do.
A. C. Van Epps, do.
Dr. R. T. Underhill, do. and Croton Point.

Ralph Hall, New-York city.
J. E. Munson, do.
W. Arbuthnot, do.
W. D. Nichols, do.
John Degex, do.
Thomas Coles, do.
Josiah Holbrook, do.
Dominic Rocco, do.
C. L. Fleischmann, do.
B. Ayerigg, do.
L. D. Williamson, do.
F. Wakeman, do.
Samuel Van Wyck, do.
A. O. Houghton, Rahway, N. J.
Col. Travers, Paterson, N. J.
Ira Harrison, Orange, N. J.
Charles Harrison., do.
Jesse Williams, do.
William Pierson, do.
T. C. Munn, N. J.
F. H. Gallaher, Jersey city, N. J.
Wm. A. Walker, Red-Hook, N. Y.
Daniel Jackson, Chester, do.
O. W. Randall, Phoenix, do.
James L. Randall, Clay, do.
Henry C. Mather, Miller's Place, N. Y.
Peter H. Brink, Saugerties, do.
Aaron Coe, Newark, N. J.
Charles Macknet, do.
Moses B. Coe, do.
Jabez W. Hays, do.
I. C. Whams, do.
Dr. Daniel Lee, Augusta, Geo.
David M. Eberly, Manheim, Tenn.
Samuel Lewis, Cincinnati, Ohio.
David Hinman, Brunswick, do.

The following gentlemen were special delegates from the New-England Silk Convention:

John S. Pierce, of Burlington, Vt.
Samuel Church, Bethlehem, Ct.
Jonathan L. Wells, Northampton, Mass.

Col. Clark thought it perhaps expedient to appoint several committees, and then adjourn for a while, to afford them time for action. This motion called up some discussion, and was finally withdrawn. On inquiring the proper order of business,

Judge Van Wyck moved, and it was agreed that a committee be appointed on the order of business, to consist of 3, and these gentlemen were chosen: Messrs. Van Wyck, Lee and Wickoff.

The committee retiring, the chairman invited those present, the meeting now being regularly opened, to speak on any subject connected with the objects of the convention; when, at the suggestion of Mr. Aycrigg,

Mr. P. H. Brink presented, with a few remarks, specimens of the injury inflicted on vegetation by the deleterious influences arising from burning brick-kilns in the immediate vicinity. The specimens exhibited were from the neighborhood of Saugerties, and comprised the Apple and Oak, the Vine, and even corn—all growing at distances varying from five to fifty rods from the kilns; Mr. Brink proceeded to give his own experience of the injurious effects: he remarked that the vegetation was destroyed the next day after the gas, or smoke as they called it, had passed over; a friend had told him that all soft and delicate Apples were most affected. After viewing this desolation in the gardens and orchards, Mr. Brink stated that he went to the forest, and found that the Oak and Pine similarly affected; but not the Chestnut. By these observations he became satisfied that the gases of brick-kilns were obnoxious to vegetative life.

Col. Clark explained the probable cause of these injurious effects, remarking that coal not unfrequently contains pyrites, or sulphuret of iron; or, in other words iron combined with sulphur. This substance on being exposed to a sufficiently high temperature, such as is produced by the burning of coal in the manufacture of bricks, is decomposed—the sulphureous portions escaping, mix with the surrounding atmosphere in the volatile form of sulphuric acid gas, and are driven to a considerable distance over the adjacent country, in whatever direction the wind may happen to blow. So circumstanced, this gas, if moisture be present, combines rapidly with the oxygen of the atmosphere, is converted into sulphuric acid, and is precipitated to the earth, destroying or injuring such vegetable organization as is of annual growth, and may intercept it in its descent. The brown spotted appearance of the plants, or rather of the leaves, exhibited by Mr. Brink, to whom as chairman of the committee, this subject was referred by the Agricultural convention held in this city last year, were no doubt the result of such a succession of circumstances; more particularly as Mr. Brink has remarked, that a light rain had recently fallen on them prior to their being gathered.

These specimens it has been stated, were collected *near* the brick-kilns in the town of Saugerties, Ulster co., but the deleterious effects, results from the same cause, often extend half a mile or even more; the same effects are of course produced wherever mineral coal which contains sulphuret of iron, is used in burning bricks.

Mr. I. D. Williamson remarked that he had noticed the same effects, for a distance of five or ten miles up the Hudson, and mentioned a particular instance where a quantity of vines were entirely ruined—the leaves being almost eaten up. In this case, a heavy shower had occurred at the time of the ignition of the kiln, when the greatest quantity of gas was evolved; the effect on the plants, was that they were *riddled*, as though the gas had dropped immediately through them.

Mr. Aycrigg described the process of burning *lime* with coal, practiced very extensively in Pennsylvania, and no evil perceived; he could hardly imagine that anthracite coal would have that effect; although it may be, he merely wished to mention the fact that the inhabitants of the region to which he referred, had never perceived any injury.

Col. Clark explained this by saying, that some coals do not contain sulphur, it is distilled off during the transformation from bituminous to anthracite coal.

Mr. Meigs here read some papers from M. Vattemare, addressed to the American Institute, relative to still another international exchange, that of the new inventions of both hemispheres. Mr. Meigs stated the object of these exchanges; defining it as an interchange of valuable works between different nations, without the least reference to their respective value. 150 volumes, on all matters pertaining to agriculture and rural economy, have been presented by M Vattemare, to the American Institute alone; and for this all that is asked in exchange, is a set of the transactions of the Institute. And now the French government announces its intention to exchange, through the same gentleman, models of all the new inventions and discoveries of Europe and America; and has reduced the price for patents down to $20, and thus endeavors to induce all nations to adopt the plan.

Agency of International Exchanges.
NEW-YORK, October 7, 1847.

To the President of the American Institute:

Dear Sir—Enclosed please find a copy of a letter written by M. Vattemare to you concerning International Exchanges—and he desires me to say that it was his intention to have left for Albany on

the morrow, but that if any active measures are taken now on the subject of his letter, he will remain here until Tuesday next, and give any information or explanations that may be desired. I would merely add, for the information of all, that M. Vattemare has made an Agency here, where any and all articles desired to be sent to France for the exhibition to which his letter refers, left at the agency here, would be forwarded to his house in Paris direct.

Very respectfully,

JOHN J. SPROULL, *Agent.*

Mr. Vattemare's Letter.

NEW-YORK, October 7, 1847.

To the Honorable the President of the American Institute:

Sir—Allow me, on the occasion of the present Fair, to call your attention to a proposal I had the honor of comunicating to you three months ago. I mean the possibility of having in *Paris* a Public Exhibition or Fair, of specimens of all the inventions, or improvements, the result of that wonderful ingenuity for which the Americans are so justly celebrated. This plan was conceived, and the determination to realize it was seconded by the parties interested, on receiving the following letter seven years ago:

"PATENT OFFICE, U. S. A., July 10, 1840.

"Sir—Permit me to embrace the opportunity to assure you how much I appreciate your zealous efforts to aid the cause of Science and the Arts, by national exchanges of publications and other objects of interest.

"It would give me great pleasure to contribute to the promotion of this new philanthropy.

"Among the various modes of advancing your views, it has occurred to me that if inventors in the United States should, through your agency, present to the French Government the free use of their discoveries or improvements, that government might in some suitable manner reward the meritorious. Such a benefit might induce numerous communications from inventors too poor to defray the expenses of a foreign patent, and yet more desirous that the public should have the free use of the inventions, than to see it taxed arbitrarily by one who has no other merit than being the first introducer.

"Let me add that the Patent Office has, it is believed, become more auxiliary to that parent branch of Industry so deeply interesting to all nations, viz: Agriculture, by a collection and distribution of the most important seeds of the world.

In this undertaking much reciprocal advantage can be derived by national exchanges.

"Accept the assurance of my highest respect and best wishes.

(Signed) HENRY L. ELLSWORTH.

To A. Vattemare, Esq., now in Washington City."

From that moment I took no rest until I had found out a scheme to bring this plan to maturity, and now I may say that I have succeeded beyond my expectations. Not only we may have an American exhibition in Paris, but this exhibition will be made at the expense and under the patronage of the French Government, as we may rely on the official promises made to me by His Excellency the Minister of Agriculture and Commerce, in a letter, of which the following is an extract:

"In regard to these models and specimens, you express a wish that on their arrival in Paris they should be exhibited in some proper place, and should thus receive all desirable publicity. If, as I hope will be the case, you succeed in making a complete collection of the principal products of American Industry, I will willingly make a public exhibition of them, and you may make use of this pledge in applying for donations. Not only that, if I understand well, the Minister would be disposed to take this opportunity of proposing to the Chamber, the creation in Paris of a great and splendid establishment, which would be called the *Museum of the Industrious* of the two hemispheres—an establishment which would not only be illustrative as well of the powers of nature as of the state of perfection to which the productions of the human mind have arrived, or are tending to, in every quarter of the globe. But a kind of Patent Office where the creations of Industry, the achievements of Intellect, of the inventive faculties, may be at once and always assigned to their true origin, and always verified without doubt or difficulty."

I therefore invite all those who feel disposed to cooperate with me in the accomplishment of this great enterprise, to meet together as soon as possible, for the purpose of taking the necessary measures to carry it into execution.

Very respectfully your obt. servant,

(Signed) A. VATTEMARE.

At a subsequent meeting of the Convention, Mr. Wakeman presented the following report on the important subject treated of as above, by M. Vattemare—the Committee to whom the subject was referred consisted of Messrs Wakeman, Aycrigg and Van Norden.

REPORT.

"The Committee to whom was referred the letter of M. Vattemare, beg leave to report:

That the substance of the proposition as understood from this communication, appears to be a national interchange of objects of Industry, Models, etc., similar in character to that now engaging the attention of M. Vattemare, as to Literature and the Fine Arts.

In accordance with this project, the French Government is ready to receive such objects as relate to the Arts and Inventions of this country, as our countrymen are willing to furnish, and to have them transported to Paris at the cost of the Government, and, where occasion calls, to grant a gratuity to the inventor for the benefit which the French nation shall receive from it. Also, if objects shall be received from different nations sufficient to justify the expense, then to put up a building in Paris expressly for the exhibition of such articles of Industry.

Since it is well known that the French Government have several Museums of the Fine Arts, of surgical preparations and of national Industry, in the exhibition of which they are as liberal as they can be, the "*Museum of the Industrious*" would doubtless be regulated on the same liberal principle. And since the inventive genius of our countrymen is such that we need fear competition with no one, the industrial character of the Americans would doubtless be raised in the opinion of the whole of Europe, in consequence of this exhibition at the grand centre of attraction.

Could *we* in the same manner receive inventions and models from all nations, it would form a museum that would be not only very attractive, but very useful to the country. How this can be effected on our part, may not at present be very apparent, since we cannot at present offer the same terms to foreigners, of bearing the expense of articles sent to us; but since these matters would frequently be brought by our vessels free of expense, we might make a beginning: small at first, but gradually enlarged, and it would add very greatly

to the credit and importance of the American Institute, if we should become the agents to receive and forward those objects from our own country, and in return become the recipients and guardians of objects sent to us in return.

We therefore offer the following Resolution:

Resolved, That a Committee be appointed to confer with M. Vattemare, and report to the Board the result of their consultation.

During the reading of these papers, the Committee on the Order of Business returned, and reported through Dr. Lee, their Chairman, as follows:

Questions for discussion.

1. An Agricultural Department of the General Government, to watch over and foster that important interest of the country, conformably to the earnest recommendation of General Washington, fifty years ago.

2. To urge on the farmers of the United States the importance of preserving, in their purity, the best breeds of Cattle, Horses, Swine, and especially of *Sheep*, that our skilful manufacturers may not be compelled to resort to European markets for the materials of fine cloth.

3. The establishment of Colleges and Schools in the States of the Union, for teaching both the science and the practice of rural economy in the most thorough and skilful manner.

4. The condition of the Linen manufactures of the nation—what has caused them to languish; what is necessary to make this branch of Industry prosper.

5. Silk culture and manufacture.

6. Potato disease—what is the best remedy.

This order was adopted, and afterward Dr. Lee made a few remarks relative to the project of M. Vattemare, of which he had heard, but being on the Committee which had just reported, had not heard the papers read. He expressed his great gratification that exchanges of

this kind had been undertaken, and hoped nothing would prevent the successful operation of the plan. We are deeply indebted to France for valuable information on Agricultural and other topics of interest and importance. He referred to the very excellent manner in which Statistical Tables of national Industry and resources are yearly prepared in France, and strikingly contrasted it with the wretched material of the same department in our own country, and even when these fine tables are *imported*, they lie uncut upon our shelves. So badly do we manage, said the Speaker, that when connected with the Agricultural Committee of one of our Legislatures, I found it almost impossible to ascertain the number of cows milked in the State of New-York! Let us by all means start into activity this project of exchanges: we can doubtless aid men of genius and learning in France and Europe, and the inventive men of this country can be immensely benefited by the lights of Europe. We can in this way do great good. We are all members of one family, and it is hoped that these suggestions will be realized.

Mr. Meigs addressed the Convention on the subject of an Agricultural Department. Public measures had long been wanting to bring into the vanguard this department of our Industry, and Mr. M. proposed that a Committee be appointed to inquire into and report upon the subject.

Judge Van Wyck thought the single fact that a Department of Agriculture had been recommended by General Washington, should be a rebuke to the public apathy, and a sufficient inducement for its immediate establishment.

The Committee was appointed as suggested, the gentlemen composing it being Messrs. Wakeman, Van Wyck and Lee.

Mr. Houghton here wished to state what might be termed a new discovery in the history of the *Potato Disease*. He would not be able to attend again during the sittings of the Convention, and would offer that as his apology for so far interrupting the course of proceedings. Having, in accordance with a previously expressed desire of the Institute, for the sake of experiment, mowed off the tops of his potatoes to prevent the disease, he found it of no manner of use. He then hit on a new plan—*of pulling off the tops* from every hill, keeping down the tubers with the foot, and afterward covering them with a handful of earth. Proceeding in this manner up and down

several rows, he paused to make an examination, and by the aid of a powerful lens, he found the cause of the difficulty—at least in *his* crop—in a beautiful pink colored worm (if indeed a worm *can* be beautiful, said he,) which was only observable after dividing the stalk. This worm was about a sixteenth of an inch in length; every dead stalk had at least *one* of them—and many from three and four to seven and eight, in each. He never found a potato diseased unless the stalk was in the same condition.

On motion of Mr. Wakeman, the Convention here adjourned until the next morning, Tuesday 12th, to meet at the rooms of the Institute in the Park, that being a more convenient location for those attending the Fair.

SECOND DAY.

Tuesday, October 12.

The Convention again assembled on this date, at the rooms of the Institute in the Park. Col. Clark, in the chair, called the meeting to order, and being obliged to leave on business, inducted Col. Travers, of New Jersey, as chairman; and the meeting was opened by the reading (and approval) of the minutes of the preceding day's session, by the Secretary.

Dr. Lee then reported from the committee on memorializing Congress to establish a department of Agriculture. The paper was well-drawn, apt and forcible, calling forth much commendation from the audience.

Prof. Meigs expressed his unqualified admiration of the paper, and thought its publication and transmission to Congress would be calculated to do great good. He said the objects of an Agricultural Department were there set forth in a correct and elegant manner, and the transmission of such a document with the attached memorial of this Convention, must produce an immense impression upon our national legislators. He then proceeded to speak of the practical operations of such a department, considering it of incalculable importance. He hoped the report would be adopted; and made a motion to that effect, which was seconded and unanimously adopted, after a few remarks from some other gentlemen.

Mr. Benjamin P. Johnson, Secretary of the State Agricultural Society of New-York, wished to be heard for a few moments on this

subject. He was familiar at Washington, and knew what would be some of the obstacles likely to retard such an establishment, but whatever hindrances might arise, the object was of no less importance, and should by all means be carried into effect. Mr. Johnson also adverted to Agricultural education; it will add to the prosperity of the nation, and the advancement of the national interests.

Mr. Wakeman moved that a committee be deputed to draft said memorial. And Mr. Van Wyck wished to amend the motion in so far as to have the committee composed of persons from different sections of the country, that the proposition might not appear to have a local bearing. Mr. Wakeman, again, thought different locations not so great an object as to have good *men*, and thought the committee should consist of three, who were, finally, appointed as follows: Messrs. D. Lee, J. S. Skinner, and B. P. Johnson.

Col. Travers corroborated what had been said, and made some suggestions in regard to the best course to be pursued in making such an application. When,

Mr. Wakeman proposed, and it was adopted, that a committee be appointed to confer with Government, at Washington, and that another committee be appointed to nominate as many persons for this purpose as shall be deemed requisite. [The *memorializing* committee were subsequently charged with this additional duty of nominating.]

Prof. Meigs said that a question had been suggested by Dr. Underhill, some time since, to the Farmers' Club, which had been referred to this Convention. The question was in regard to *manures* when placed in the soil, do they ascend or descend? As Dr. Underhill was present, he hoped he would present this subject at this time.

Dr. Underhill replied that he was happy to oblige the gentleman preceding him, but should prefer deferring his remarks until a future period, when he would proceed to state definitely his arguments in favor of the position he had taken on this subject, which was contrary to the generally received opinions of the last two hundred years. He considered it a question of immense magnitude and importance to the Agricultural interest of our country, and wished to be accurate and fully understood in his remarks.

By solicitation, however, the Doctor proceeded to give an outline of his theory. He enumerated numerous facts showing the reasons-

bleness of his opinions: it is the generally received opinion that manures *descend* into the earth, in gravel and sand much more rapidly than in clayey and compact soils, and that the descent is particularly rapid in a loose, sandy soil. All is entirely false, as well as all that practice founded on the supposition that manure descends into the soil, except, perhaps, temporarily, for the heat of the sun, acting in much the same manner as capillary attraction, causes the manure to *rise*. This influence of the sun extends very deeply, particularly in those loose, sandy soils, and draws up toward the surface of the earth, more or less, all substances that are not absolutely inert—devoid of vegetable life. The influence of solar heat to cause the rise of all manures, is great in proportion to the degree of heat. In the Cape de Verde Islands, where there is often no rain for weeks together, the sun has an exceedingly powerful effect on manures.

The only time when manures tend at all downward is during rain, when of course they are washed down; but it is *only* during the continuance of the rain; the action of the sun upon the earth immediately draws them back, they *ascend*. The purest water is found in the loose and open soil above the clay, and if manures *do* descend, the water would in time become contaminated, while it is a notorious fact that *the purest water is found in those very soils*.

The Doctor stated that he acted upon this principle of *ascension* for ten years, and on all kinds of soil, and had accumulated a sufficient weight of evidence to make it incontestable. A common illustration of the correctness of his theory was afforded in *graveyards*. All had witnessed the astonishing change produced in the most barren grounds where dead bodies had been deposited. Soils before the most sandy and barren soon became dark-colored, and gave the rankest growth to grasses and plants, whose seeds had found their way to the surface. He had induced several farmers on Long Island, during the past year, to deposit their manures twelve to eighteen inches deep, and when this had been done in every case a double product has been acknowledged. If his views were correct, which he could easily prove, a revolution in the management of soils through the entire country must follow.

He then spoke of the importance of Institutions for making adequate and thorough experiments, and the application of them to public use, on important questions of this kind. What science has done must be thrown on AGRICULTURE, for that is the foundation of all national prosperity and influence; and even if government should ap-

propriate thousands for its benefit, (which, shame to say, there is no present indication that it will do,) it would be all returnable, five-fold, in less than five years. It is only necessary to give impetus to public feeling in this matter and we have all we want.

Dr. U.'s remarks were of much length, though but a sketch of the theory of the intended paper, and were delivered in an enthusiastic and able manner; they elicited many marks of approbation.

Mr. Ellsworth, of Ct., stated some experiments made by him in the use of *fish* as manure. He had deposited them uncommonly deep and pressed them down, and for several years a remarkable effect had been perceptible, while in adjoining lands of the same character, and no poorer than his own, where fish had been used in the ordinary manner, the effect had very soon disappeared. He spoke also of some experiments he had made or contemplated making in the use, as manure, of the refuse of paper mills, &c. He has collected for future experiment, the refuse of the mills remaining after the bleaching process, the wash, as it is called, which he thinks much richer than that from an ashery. He has prepared a reservoir to place the wash, and intends to sell what he has no occasion for using on his own farm, at a fixed price. Mr. E. spoke particularly of soda-ash, but evidently preferred the paper-wash. He also referred to the cultivation, by himself, of about thirty acres of woodland; and in reply to a question from Dr. Underhill, stated that after cultivating it for some time, there appears to be no soil at all; all sand, and scarcely any alluvial.

A member remarked, that *to prevent the rise of manures*, plaster of paris had been found very efficacious. It appeared as if it drew back from the atmosphere what was taken away by evaporation. By its use, twenty to thirty bushels of Wheat had been raised on land which a few years previously was utterly unproductive.

The hour being quite advanced, and to shorten proceedings, Mr. Wakeman suggested that each subject remaining for consideration should be referred to a committee, to report as soon as may be practicable. To which the Convention agreed, and the committees were finally appointed, as follows:

Committees.

On the *establishment of Colleges and Schools* in the States of the Union, for teaching both the science and the practice of rural economy, in the most thorough and skilful manner—Messrs. J. S. Skinner, Clark and Meigs.

On Cattle, Sheep, &c.,—Messrs. Fleischmann, Hall, Wickoff and Randall, with power to add to their number as there may be need.

On Linen Manufactures, Messrs. Tallmadge, Wickoff and Havens.

On Silk culture and Management.—H. C. Mather of L. I., J. S. Pierce, Vt., A. C. Van Epps, New-York.

On investigating the Potato disease.—Messrs. Van Wyck, Prof. Chilton, J. S. Skinner, R. L. Colt, R. L. Pell, John Travers, David Grant (Pres. Hartford county, Ct., Ag. Soc.,) and A. C. Van Epps.

On Industrial Protection, and internal improvement.—Messrs. George Bacon, A. Chandler, Edwin Williams, Erastus Ellsworth and Lorenzo Bull.

On memorializing congress, and conferring with the government as to the establishment at the seat of government, of a NATIONAL DEPARTMENT OF AGRICULTURE, conformably to the often-expressed wish of Gen. WASHINGTON. Messrs. D. Lee, J. S. Skinner, and B. P. Johnson; with power to add to their number.

Publication Committee.--Messrs. Wakeman and Meigs, with power to add, to confer with the committee, and co-operate with the secretaries.

Mr. Lewis of Ohio, having suggested that it would be a good plan to offer a premium for the best essay on any one of the subjects before the convention,

The chairman Col. Travers, offered a personal premium of $25 for the best essay on the third subject. The condition of the *linen manufactures* of the nation; what has caused them to languish, and what is necessary to make this branch of industy prosper.

At the close of this day's session, Judge Van Wyck made a few observations in regard to the gases of brick-kilns; he disagreed with those who had preceded him, and thought the injury arose from the *heat*; he knew that for a great many years brick-kilns had been burned continually, in certain localities with which he was fully acquainted, and he had never heard until very lately, that those kilns injured vegetation; except, in so far as that vegetation was so near the kilns, that the intensity of the heat caused an absorption of moisture from the plants; he wished to have the subject fully examined,

and by professional men, capable of *analyzing* the gases, if any there are, to ascertain correctly whether they are injurious or not.

Mr. Ellsworth remarked that where coal was *not used*, the same bad effects were observed.

Dr. Lee, again, believed that the injuries were originated by the burning of the *clay* itself, and that only particular clays contained these noxious properties.

On motion, the convention adjourned to meet again a week hence, the 19th; so lengthened, a hiatus being deemed desirable on many accounts.

THIRD DAY.

Tuesday, October 19.

The convention met pursuant to adjournment, Col. Clark in the chair.

The minutes of the last meeting were read and approved.

Mr. Wakeman then recommended, that Mr. Erastus Ellsworth, of Connecticut, who had just arrived, should be placed on the *Committee on industrial protection* appointed at a previous meeting of the Convention. [Mr. Ellsworth's name will be found on that committee in the report of the second day's proceedings, in conjunction with Messrs. Chandler, Bacon, Williams and Bull.]

Mr. Ellsworth expressed his willingness to do all in his power to forward this important object, and all the interests of the American Institute. He had been privileged to stand by the side of Mr. Wakeman at the organization of this institution, and had now come to devote a week to it. We have, said Mr. E., recently established an institution at Hartford, entitled, the "Repository of Arts," to cooperate with the American Institute, and founded on much the same principles—resulting from the efforts of the leading members of the Hartford county Agricultural society. Mr. Ellsworth proceeded at length, to give a sketch of the objects and benefits which will inevitably accrue from the establishment of such an institution in the land of steady habits. He read some extracts from the well-written circular of the institution, giving a clear idea of the whole matter, as follows:

"Its design, then, is to establish in Hartford, (it was *commenced* on the 1*st* of May, 1847,) a depot for the reception, safe keeping and daily exhibition, of all and every such article, of whatever name, kind or character, as shall exhibit progress in developing the means of life, and adding to the comfort, convenience and general welfare of Man. To open a store-house for the productions of the universal genius of our people, wherein models, drawings, designs, specimens and descriptions of every improvement, in agriculture, in manufactures, in mechanicism, in the arts, in short in any thing and every thing which finds a name and a place of utility among us, may be exhibited to the world for the benefit of all.

It will be a Universal Directory—Saving to Inquirers and Purchasers, both time and money.

For example—the Farmer, in pursuit of the best plow, or other implement of his calling, will no longer be dependent for the requisite information, upon those whose interests in the matter might perchance run counter to his own, but may resort at once to an exhibition, side by side, of *all* the various models and paterns extant, and decide for himself from the evidence of his own senses

The Mechanic, in the selection of the implements and tools of his trade, will make a like resort.

The Manufacturer, wishing to keep pace with all the various improvements in fabric and machinery, will not fail to be among its most frequent and closely observing visitors.

The Purchaser, before he makes a large outlay for a new and untried article, will have recourse to the place where samples in every variety and kind are exhibited, and will form his judgment in view of all.

Secondly. It will be a general medium of advertising, of the utmost practical importance and value to inventors, producers and owners.

To each article, in some conspicuous place, will be attached the card of the inventor or proprietor, showing the place or places of its manufacture, agency and sale—and accompanied with such detailed description and explanation of its use and merits, as the owner shall deem necessary to their full understanding. Should an ingenious Mechanic effect some improvement, over all others, in the hay-

cutter for example, he has but to deposit his improved model, and its comparative excellence is at once seen and known of all, and his card attached, shows where it can be obtained.

Should an Inventor produce some new, or newly contrived article of utility, wishing to effect its most ready and general introduction into market and use, he at once deposits his models and descriptions, and his invention is before the public eye.

The obscure but meritorious Artist, Tradesman, or Artisan, whose skill has executed, or whose genius devised some work of rare merit, and who, friendless and alone, is without the means or the influence, necessary to bring out his production properly to view, has here a new field open to him, and a free passport is here offered him to the favor and patronage of a discerning public.

In short, whoever desires to call public attention to any invention, design, improvement or production whatever, will here deposit his models, samples and descriptions, not only that their merits may be seen, but seen and compared with all others of a kindred character.

Again. It will be an Ordeal, in which to "try every man's work of whatsoever sort it is;" directly and powerfully tending to reward real merit, by showing forth its superior claims to public patronage and favor.

Here would many of our citizens, who purchase articles of foreign manufacture, learn for the first time, that they could purchase a better and cheaper article at home, the production of our own superior skill and ingenuity. And here, also, would the inventor resort, before he wasted capital, and days and months of intense thought and laborious experiment, to ascertain whether his conceptions were not already anticipated, and successfully executed by others.

The committee, however, believe that every reflecting mind, unaided by any mere hints, or vague and meagre outline which it is in their power to present within the space allotted them, will readily perceive how vast and almost boundless are the advantages of such an institution, properly established and conducted. They propose no new experiment, they recommend no untried scheme. Such institutions are already in successful existence in our own, as well as in other countries; and no reason can be assigned or conceived, why Connecticut, unsurpassed, if not unequalled, by any portion of our

earth in the spirit of invention, enterprise, genius and skill of her people, should, in this matter, be recreant to her own interests, or should fail to perceive and to secure them. Deprived by nature of an equal and fair competition with the fertile valleys and prairies of the west in the productions of her soil, she is yet more than compensated, by the same beneficent hand, in her water power, and in the fertility of invention necessary to its improvement. It is the unmistakable destiny of New-England, in which peculiar destiny Connecticut largely partakes, to be the *Workshop*, in time to come, of this Western Continent at least. And it is time that she was arousing and preparing herself for that destiny. Every muscle should be schooled to profitable service—every impulse given to inventive progress—every facility afforded, giving scope and vigor to mechanical genius, and every encouragement and incentive offered, to bring out improvements in Manufactures and in the Arts—and the establishment of a Repository of Arts, is designed as being most effectually subservient to these great ends.

On the consideration of the 6th and last subject before the convention, viz: *The Potato Disease*—what is the cause and what the remedy? A committee was called for and appointed, [the names of the gentlemen composing it will be found under the general head of "*Committees*," in the report of the second day.]

Mr. Ellsworth remarked, that he was a potato-raiser, and believed that absolutely *nothing* was known either of the cause or the remedy for this Disease. He had never seen any reasonable explanation, and no light had been obtained from any source.

Similar views were expressed by the chairman, Judge Meigs and others.

The subject of Silk was briefly considered, and some papers were submitted by Mr. Van Epps. The subject of State Bounties was discussed, and the Convention recommended that the Legislature of this State be memorialized to re-enact the expired bounty law.

The following is a portion of one of the chiefest of the papers submitted by Mr. Van Epps. It is from Mr. John Fox, superintendent of the Silk Factory of J. W. Gill, Esq., at Wheeling Virginia, and will be found to embody much valuable information which only a practical man can properly give. The communication bears date September 27, 1847.

* * * * * * * "I have, for six years, been superintending the Silk factory of Mr. Gill, of this place, (Wheeling,) and feel pleased to report our progress in the trade, notwithstanding the difficulties at tendanton every new enterprise; especially one so nearly connected with the Fine Arts. We have eight looms in operation, which are employed in making Mantua goods, nap, plain, and striped satins, plain and fancy velvets of all kinds; one Jackquard loom for weaving tissue and brocade silks; one loom for gentlemens' black and fancy cravats from 35 to 45 inches in width; one gauze loom, one for ladies cravats, and 1 ribbon loom, which weaves 20 pieces at one time, berides, 3 power looms in constant operation for weaving plain and twilled pocket handkerchiefs, some of which we sell plain, some we print. I have sent you a specimen of my work, made in one of our power looms; it is of silk grown *this year*, and 80 yards in length, for exhibition, and to be put in competition at the 20th annual fair of the American Institute for the Van Schaick premium.

After considerable trouble, we have so adapted the gearing and motion of the power loom, that it exactly suits the nature of silk, and weaves it as well as it can be done by hand, as the specimen sent I think will prove. We hope at some future time, to put ten looms in profitable operation. Mr. Gill, as the principal owner of this establishment, deserves his country's best thanks for the untiring zeal, trouble and expense in this as yet infant cause which, one day, is destined to save our country millions of dollars. We have difficulties to contend with, but amidst them all, I am satisfied the Silk business has a solid foundation. There are two *serious* difficulties among the many, which I will state: 1st, the imperfect way in which some silk-growers kill the chrysalis and cure the cocoons, many of which are left to heat, instead of spreading them out to dry, after the chrysalis is killed; thereby rendering the cocoon doubly hard to reel; and this error causes the reeler to return less per bushel and less per day. The second difficulty is that many silk-growers, after raising a good crop, keep their cocoons till January, February, or March, when, their farm work being partly suspended by frost, they think this is the time to bring the cocoons to market, forgetting that cocoons never reel so well as in the first month they are produced. Mr. Gill, however, in his zeal for the cause, has sent none away, however old or badly cured, till within the last year; prior to which, he advertised, constantly, for several months, that he would buy none in future after the 1st of November in each year.

Could we get the cocoons raised in the Ohio valley, and put our six reels into operation in July, August, September, and finish in

November, it would save 25 to 30 per cent. to us and the grower. In these months the days are long and warm; the steam for reeling would condense less, and the silk dry easily on the reels—while in cold weather it will take three times the time to dry, and silk loses much of its brilliancy by being taken off the reels damp.

There are other difficulties in connection with this new business, as teaching hands to reel well, which is an important part, and to teach them to wind the silk quickly and without waste—keeping in mind that we have to work against countries which have the experience of a thousand years in the silk manufacture and trade, against us. We have also to teach our girls to weave, for the manner in which this is done with silk, is different from that of cotton and woolen goods; in our 36 inch power-loom handkerchiefs, we have 50 dents per inch in the reel, and about 3,600 threads; while in brown muslins they have 18 to 20 dents per inch. We go about 80 to 90 sheots per inch, they perhaps 40 to 50 per minute.

To return. I must again say, if the silk growers will bring us their cocoons in proper time, and cure them well, our two principal difficulties are removed, and we shall ultimately rival any of the old countries. The writer has been in the silk trade from a child; was workman to Guillot and Jacquet, of Lyons, more than eight years, have woven all kinds of broad silks and ribbons, and can testify that no silk in the world can excel, for strength and beauty, that of well reeled American manufacture.

We have 24 hands in full employed in this factory, beside several out-door hands. The proprietor of whom I have before spoken, has this season purchased several choice lots of cocoons; among them 7 bushels from Ohio, fed on the Italian leaf; which produced 19 ounces of silk to the bushel; for several days (of 11 hours,) my daughter reeled a bushel per day—20 fibres per thread. Our girls of less experience, average 12 and 14 oz., per day. The cocoons were new; they were bought as soon as spun up, and the chrysalis not killed.

I could state several instances of the same kind, relative to our own cocoons, as well as others, all going to prove the practicability of growing and reeling silk profitably. The above 7 bushels produced 8lbs. 5 oz. silk; the cocoons, reeling, and all expenses added, it cost $4,50 per lb., and was a superb article.

I am well acquainted with the management and growing of silk-worms, having made it my study for many years; 5 of which were spent at Mount Pleasant, Ohio, at which place we had 20 acres of trees, and 3 cocooneries; we raised cocoons several years—the average cost price, was about $2.20 after everything was paid. Cocoons of the best quality we obtained from the neighbors, at a price of $4 per bushel. Of food, I prefer the white Italian and Canton leaf to any other; we generally feed three crops, the first two turn out the best. I believe the "cradles," of great use in feeding large quantities of worms, as they crawl about through the branches almost as well as on a tree; thereby promoting their health and saving much time in feeding. I believe cocoons can be raised for from $1.75 to $2 per bushel, and yield 18 oz. of silk to the bushel, if properly managed.

Thus, gentlemen, I have give you a rough sketch of our operations and experience in this line of business, and trust some hints will be of use to the silk-grower. Silk growing, unfortunately, seems at a stand-still; that is, there is only about the same number in the business *now*, that were three years ago; when one quits, *another* and occasionally two will commence. It would be well for all the states to give a premium for 6 or 8 years, to arouse and stimulate more to embark in such a valuable undertaking. The government of the old world did hold out every encouragement to those who had courage to hazard their capital and time, in the silk culture and manufacture, by loans and premiums; well knowing it would eventually turn out a rich source of national wealth. At this time we solicit our Senators, representatives and wealthy citizens, to "start fashion," to patronize and be proud of wearing our American manufactures which eventually will make us what we wish to be, truly independent.

Yours, very respectfully,

JOHN FOX.

After the presentation of this paper, some conversation arose on the subject of the Hartford Repository.

Mr. Travers reviewed the character and aims of the institution, and highly approved of it.

Mr. Ellsworth expressed his wish, that exhibitors of articles of utility and ingenuity at the present fair, the product of American skill, and calculated to encourage and foster American interests, would contribute specimens for the institution of Hartford.

Mr. Wakeman and Col. Clark considered this an important ally of the American Institute, and a legitimate fruit of its efforts, as it had been organized by individuals who aided in the formation of this, and had co-operated with it for the last twenty years; they hoped many contributions would be made by manufacturers and mechanics of this city, and the country, now exhibiting specimens of their products at the fair.

Mr. Wakeman called attention again to the proposal of M. Vattemare; this subject was considered very important by the American Institute, and the managers had been led to appoint a committee to report to the convention; which report Mr. Wakeman now submitted. [This report, as given by the committee, Messrs. Wakeman, Aycrigg, and Van Norden, will be found immediately following the communication of M. Vattemare, in the first day's proceedings of the convention.]

The convention now drawing to its close,

Judge Meigs hoped these annual conventions would be continued; they had but a slender commencement; yet, their action had not been devoid of importance or utility, and it might eventually grow into an extensive and most important convocation.

Mr. Wakeman said there had been a wish expressed, that the convention might be held in other sections of the country; he proceeded, however, to show very clearly the great superiority of New-York over all other locations for such a purpose.

And, on motion, the executive and publication committee, (the same persons composing both,) were empowered to appoint the time and place of meeting during the next, and twenty-first fair of the Institute; and they have also at their option any part of the United States, or if they choose, need not wait a year.

Thus closed the third annual sitting of the Convention of *Farmers, Gardeners and Silk Culturists* in the City of New-York; and the meeting adjourned *sine die.*

MAHLON DICKERSON *President.*

A. C. VAN EPPS, } *Secretary.*
AUGUSTUS MAVERICK, }

The following papers and reports &c., were prepared by appropriate Committees, but not in sufficient season to be inserted into the body of the Report.

THE POTATO DISEASE:

ITS SUPPOSED CAUSES AND REMEDIES, OR SOME OF THEM.

BY SAMUEL VAN WYCK,
Chairman of the committee on the subject, appointed by the National Convention of Farmers, &c.

The Committee appointed by the National Convention of Farmers, Gardeners and Silk Culturists, held during the 20th Annual Fair of the American Institute, to investigate the Potato Disease, its supposed causes and remedies, or some of them,

REPORT:

That they have given the subject some attention and think, that it is unnecessary and useless to recapitulate much of the matter that has accumulated in relation to it for years, both here and in Europe. That the important facts touching it have been taken hold of by men the most eminent for science generally in the world, and ingenious and plausible theories formed, as to the causes of the disease, and the most efficient remedy for it. That enough has been written, spoken and published, in relation to it, to form if collected together a tolerable library, the sight of which would deter a great majority of readers from approaching, much more to think of reading and digesting the contents of its numerous volumes. The most important articles contained in these would be more likely to be read individually in the different newspapers, pamphlets and periodicals, in which they each originally appeared.

All that has been written and published upon the subject, has no doubt been with the best intentions, and a sincere desire to alleviate suffering humanity, especially in the old world, where the disease has been most severely felt.

To pronounce any of the conclusions arrived at by these various writers, even if they appeared so, *absurd or ridiculous*, would be rather uncharitable; if noticing them at all we think it should only

be to give them credit for *good feeling* and suppress any harsh opinion of their efforts, the one animates to new exertions, and the other discourages and shuts the door perhaps against the true light or remedy for the evil; which often in cases like this issues from the humblest cottage or cabin in the land. The wisest then exclaim, how strange how wonderful we could not have seen a thing so plain and simple!

To examine opinions and theories as to the causes of the disease, and the proper remedies for it, whether they are probably the true ones, especially when emanating from high sources, and fortified by imposing names, is not only proper, but a duty of every good citizen, provided it is done with courtesy and kindness. Otherwise the public might suffer by remaining quietly under the disease, thinking it incurable, or by useless, expensive and perhaps ruinous experiments trying to cure it, which would be the case if the causes were misconceived, or the remedy not the true one. Your Committee after some reflection and examination of the features of this disease, as it has appeared in the world in different years, think (and they may be wrong,) that the cause or causes for it have not yet been ascertained, nor the remedy to prevent it discovered.

That the cause is not variableness of weather, or sudden changes of temperature, as some have supposed, although these may aggravate it where the seeds of decay previously existed. We think the potato disease anomalous in its character, and has no parallel with the rots or blights which have heretofore and do still attack, injure and more or less destroy most plants, including this one in certain seasons. Let us examine for a moment the last opinion of note that has been gravely given to the public, as to the causes of the disease, and see how far it accords with the character of it as here described, or since its first appearance in the world. In doing this we flatter ourselves we shall illustrate and confirm our positions as above stated, and also show that the distinguished horticulturist to whom we allude, leaves the public as much in the dark on the subject as any of his learned cotemporaries who have preceded him in their attempts to shed light upon it.

Mr. Bridgman in his horticultural report for the last Fair of the American Institute of this city, in speaking of the potato rot says: "rottenness is the effect of deterioration, produced by the absence of a living principle. In a certain stage of growth, cherries, after a

single week's rain will rot on the tree. Such also is the case of other fruits. It is well known that grapes, gooseberries, currants, melons, &c., often prove a failure. Indeed, it would be difficult to name any production of the earth that yields full and perfect crops annually: on the contrary it is well known that famine has been of frequent occurrence in populous countries, through short or defective crops of the necessaries of life.

Why, then, I would ask, should we expect good potato crops twice in every year? Having devoted much attention to the nature of plants in general, I have come to the conclusion that the alleged disease in this esculent, is not caused by defective seed, but that it is generally the effect of variableness of weather, and one extreme of temperature suddenly following another. In some instances, the defect may have been occasioned by the injudicious use of acid manure, which is destructive to all description of esculent plants in hot dry weather. New land without manure, generally produces the best crops in dry seasons: it must however be acknowledged, that the extremes of heat, cold and moisture, are alike detrimental to vegetation in all seasons, and that hot dry summers are often attended with results as fatal to vegetable productions, as the coldness of winter."

First: "The alleged disease is not caused by defective seed." Mr. Bridgman certainly would not recommend the planting of defective seed at any time. If the defect is only a common rot, such as the root has always been subject to in certain seasons, or the want of proper care in gathering and housing it, it would be less likely to germinate and grow healthily, than if planted in a sound state. Such a defect existing during the prevalence of the rot in question, would be much more hazardous, as it would be more likely to run into and become the contagious rot. This is natural both as respects animals and plants, when contagions prevail.

At any rate it is a defect, the plant is made worse by it; and rottenness (he says,) "is the effect of deterioration, produced by the absence of a living principle," and according to reason in such a state, it would be less likely to live much more to prosper, under "the absence of a living principle," than if possessing all the vital powers. Besides this disease lays dormant in the root, often for months before it appears; when on the surface all is fair and smooth, not a suspicious speck to be seen; it shows itself sometimes about midwinter, or not till spring near the planting time, and frequently does great mischief at these periods.

Great care is required in gathering and housing the crop, and overhauling and assorting it during winter and spring; with such an insidious enemy, and with all possible care "defective seed," is no doubt often planted; and if rot follows, which in nine cases out of ten it will, then "defective seed," is most likely to be the cause. That the rot in question is caused by "variableness of weather," or sudden changes of temperature "extremes," &c., we do not believe; it is five or six years at least, since the potato rot commenced, and during that period we have had two fine seasons, if not more, as fine perhaps, as we ever had; when as respects temperature, there was a fair balance, due proportions of heat, moisture, &c.; all the other plants generally produced abundantly.

Was the potato disease less violent these years? not at all, if any thing, in some places it was more severe; if weather or change of temperature were the cause, most other plants would have felt it as well as the potato: whereas, this before the disease showed itself in good seasons, was the most prolific of all, giving a much greater yield in proportion to the quantity of seed used, than most other plants. Nor do we think the comparison which Mr B. makes, between the potato and some of the more delicate fruits, which grow and mature above ground applicable; such as cherries, currants, grapes, melons, &c. These he says, "in some unfavorable seasons and situations often prove a failure," they are above ground, and more exposed to a damp sultry atmosphere, and they ripen generally early in the season; and most fruits, especially the delicate ones after reaching maturity, or near it, and remaining any time on the shrub, tree or vine on which they grow, are more liable to decay, and to be affected by wet foggy weather, than the potato. To strengthen his ground as to the cause of the rot, he says: "it is well known to all experienced gardeners, that the difficulty of raising early cauliflower in our climate, is such, that in the event of one month extreme weather taking place, when the vegetable is near maturity, its effects are so injurious that very few perfect heads can be obtained, whereas in the temperate climate of England, this vegetable as well as broccoli, are as plentiful for eight or nine months in the year, as our cabbages are here. We would ask whether "in the temperate climate of England," (and might have added Scotland, Ireland, and some countries of the continent, for they all possess climates more temperate and uniform than ours;) the potato rot was less violent than here, especially in seasons when the broccoli, cauliflower and other plants flourished there, and gave plentiful crops? On the contrary it was more violent, and far more disas-

trous in its effects; as in one or two of the countries named, the failure of the potato produced famine; when here if there were not a single one raised, and the other crops usually good, it would not create famine, although it might be much missed; than in the countries above named, in Europe, or perhaps in the world were produced crops of this root equal to them, and certainly not superior in quantity and quality in ordinary good seasons before this disease appeared. Mr. B., after stating very truly that it would be "difficult to name any production of the earth that yields full and perfect crops annually; asks, why then should we expect uniformly good potato crops twice in one year?" we do not expect it, and very few get them in our country, since the disease appeared; some with the greatest care cannot get one; and "in the temperate climate of England," and some other countries of Europe, it is considerably worse.

The truth is, there is no ground for such an expectation, nor should we think it could exist at this time to any extent either here or there. To show the capricious character of this disease more strongly, and that it is unlike any other which afflicts other fruits and plants in certain seasons, we will enumerate some of the remedies which have been tried and their results.

Some have planted the root early, others late in the season—the tops have been mown or cut off at certain periods—alkaline remedies have been used in different shapes, ashes, lime, soda, &c.—most mineral and putrescent manures have been tried, and in every way, and in time most of them discarded—the seeds or balls have been planted—new varieties of the plant have been obtained from distant neighborhoods, where the disease had not prevailed to much extent, and which were supposed to be free from the infection, according to the old fashion practiced before this malady was known, and always with success, of changing seed when an old one was supposed to be degenerated, or worn or run out by long use in the same locality. Others have sent to foreign countries where the blight had never appeared, to procure a virgin seed and to plant it as near as they could in a virgin soil—all have failed—on the application of some of these the crop has been a fair one: perhaps the next season when used in the same localities, and under the same circumstances, there was in most cases partial, and in some a total failure. These freaks and changes in the disease and results of the remedies, must be familiar to all who have paid any attention to the subject. Early planting

of several varieties has been more successful for the last year or two, and especially the last year than late. Numerous certificates with signatures annexed, of respectable practical men, residing in different parts of our country, can be procured if necessary, to authenticate the facts here given with many others, these though, are deemed among the most important. This year, from the best information we have been able to obtain, it has been more violent here generally, than the last. In Europe, from the latest and best accounts, the disease is generally not so bad as last year, and in some places, especially Germany and Ireland, worse, and when most other plants have yielded a fair average crop, or equal to what they usually do, in ordinary good seasons. The disease may disappear gradually or suddenly as it commenced, or it may last years yet, and perhaps an age. Still, we hope for the best, and also hope our scientific and practical men of every grade, both here and in Europe, will persevere in their investigations and experiments, as long as the disease continues, and give their results to the public, and not only expect, but invite fair opposition to, and scrutiny of the same, to test their correctness. In cases like the one before us, a friendly collision of opinions often elicits truth, and much good is the result. Experiments are of little use in this singular disease, unless repeated in different seasons and localities, as an escape when made once is no test. The next time when used in the same place and under the same circumstances, or in a different locality, the disease may show itself in its worst aspect, as has often been the case.

To corroborate further our views here given, we will insert *verbatim*, a letter which accidentally caught our eyes in a late English periodical, viz: " Sir, the following fact about the potato plant, may not be unimportant about this time of the year.

I last year received direct from the Brazils, two barrels of genuine wild potatoes, small but very healthy, having been grown in a district where no blight had been known. They were planted about the end of February, in land that had remained in pasture more than twenty years. The situation and soil were favorable, the latter a little stiffish, no dung was used in setting them but a few decayed leaves and a little sand. Under the circumstances, then, it might be well expected that if potatoes can escape disease, these would have a fair chance. Wild Brazilian potatoes planted in England for the first time, in a favorable situation and in virgin soil. Yet in autumn the disease failed not to appear, and even carried off a third of the finest and most vigorous looking crop ever seen.

The above must then contradict many of the theories which have been advanced as to the cause or origin of the disease. It cannot be owing to any *degeneration* in the plant itself, to any corruption or exhaustion of the land, or from over dunging as some imagine.

If you think this letter worthy of insertion as throwing any light (if it be only of a negative character) upon the question of the potato disease, either by settling disputed theories, or by preventing farmers from taking useless precautions or vain experiments, it is at your service for insertion. I enclose my card and address, and am sir, &c.

Manchester, England, February 5th."

Mr. Ellsworth, who resides in Connecticut, and a member of our Committee, but who has not been able to attend our meetings, obligingly sent us some facts and remarks by letter on the subject, which are important, and the more so as they are recent and the result of observation on his farm and in his neighborhood. He is an intelligent practical man, of great accuracy and discrimination in all matters, and especially of this kind.

(Letter.)

I can give you a few facts in relation to the potato, but as I remarked in the convention after all that I have read, heard and observed, I think that neither the cause or cure are understood. Hence the importance of continuing enquiry after facts, which should be carefully recorded with the hope, that from them may be found the cause or cure; the facts which I have to add, are as follows: As early as our warmest upland was in condition to plow and plant, last spring I planted a small piece for early potatoes; the ground had been used as a garden, was in good heart, and a small portion of barn-yard manure was put in the hill; the soil rather inclined to light sand, the crop ripened early, was good; and I have not found a bad potato in the piece. The kind was the early blue. The second piece planted about ten or twelve days later—soil the same—manured as the first piece—seed, Mercers; the crop was good, and a very few defective from that piece; possibly one in a hundred bad. Perhaps a week later I planted a third piece, and after that a fourth piece, part with Mercers, part with Scotch Greys and a few Carters.

When dug there was no appearance of bad potatoes in the third piece; but a few days after they were housed, we found many bad potatoes, perhaps an eighth which I carefully picked out and threw

away. When the workmen commenced digging the fourth piece, (they were dug in order of time planted;) they found of the Mercers and Greys, about one fourth defective, and I did not think them worth carting home; of the Carters, very few were injured; perhaps not one in twenty. About two days after they were housed, we found the rot progressing in those which we supposed sound when carried in, and we overhauled them all; with the exception of the Carters, we found as a general remark, the injury was in proportion to the season of planting; the first planted not injured, the last planted nearly all lost. I was on the point of concluding that as I had been most successful on my warm upland and light soil, perhaps the evil might be avoided by planting such ground early; but a neighbor who planted on such soil last year, early, lost most of his crop. When conversing with a gentleman from Farmington, a few days since, he remarked that all his early planting escaped the rot; while all his late suffered.

I offer no opinion, for I have formed none on the subject of the cause; but as I said before, think we must go on collecting and publishing facts."

We will make a short quotation or reference to high authority of our own country. In one of Prof. Silliman's late journals, there is an article on the potato disease; it notices experiments carefully made on the root, by two eminent professors of European universities; one German, the other Dutch; as to the cause of the disease, these gentlemen concluded that it cannot be insect or fungus; they then proceed to try the weather, or atmosphere to find the cause there. After many observations, and collecting numerous facts during one or two seasons, in Holland and Germany; they intimate they see something more like the cause, and which would equally affect other plants; nothing conclusive though. The article observes on this intimation, " when we acknowledge all these extraordinary facts, we still are forced to look for some special pre-disposition, to disease among the potatoes themselves. In what, this special pre-disposition consists, it is not easy to say; if as seems possible, atmospheric influences induce such chemical changes in our growing crops, though we have found a cause, we have not found a remedy; to guard field crops from atmospheric changes, is not an easy matter.

Such changes may occur only at long intervals of years; but the fact of their occurring at all, will be a warning to the nations, not to place their sole dependence on a single crop. Unhappy Ireland, and the north of Scotland, are mournful examples of this mistake."

The Cultivator, one of our oldest and among the best of our periodicals, on this conclusion of the journal's article, makes rather a homespun but pointed comparison. "If there is only one leg to the stool, and that is knocked out, the sitter thereon is at once placed in imminent jeopardy."

We from our hearts, (and in this we feel assured, we are joined by a great majority of our countrymen;) sympathise with many of our afflicted friends across the water, that they have not at this time like ourselves, a half a dozen legs to their stool, that if one should fall or be knocked out, they would *not* be placed in "imminent jeopardy."

We also, as sincerely rejoice, that from our surplus stock of legs we have been enabled to loan or present them, with a supply to relieve them in some measure from their perilous situation.

We will conclude this report by observing; First: that the disease in question is irregular in its character, without rule or precedent, bears little or no analogy to anything of the kind, that has appeared within our memories, and perhaps for ages previous.

Second: That the true causes for it have not yet been assigned, and that the remedy to heal and subdue, or prevent it, has not yet been reached. We think our premises have been sustained by the facts and circumstances here adduced in their support, and the reasons plainly deducible from both facts and circumtsances, will in our judgments fully bear us out in making these conclusions.

Which is respectfully submitted,

SAM'L VAN WYCK.

Chairman.

INDUSTRIAL PROTECTION.

BY GEORGE BACON,
Chairman of the committee, appointed on that subject by the National Convention of Farmers, &c.

The Committee to whom was referred the subject of "Industrial Protection," beg leave to report:

They approach the subject with diffidence, and but for the importance of the question, and the hope of being able to present it in a point of view to which sufficient consideration has not, in the opinion of your Committee, hitherto been given, would deem its farther consideration a work of supererogation, it having so long occupied the attention of the most powerful minds in the national councils.

Casting our eye back through the history of the last thirty years, what do we behold—the tariff—at all times the exciting topic of debate, which, unfortunately, still remains as unsettled as ever—a meagre compliment to the wisdom of statesmen.

In 1816 we have the Southern States advocating the protection of American manufactures and the Eastern States in violent opposition—long and arduous is the struggle, but protection as a leading principle in national policy, prevails. In the progress of time the sections of the country change positions, the South becomes the opponent of protection, and the East its advocate; their leading statesmen are the same, but like their constituents, each abandons his former position, and adopts that of his opponent. The struggle continues violent, and threatens civil commotion, when that great statesman, who amid all the changes of party has adhered firmly to one principle, "protection to American Industry," with a magnanimity becoming his character, consents to the abandonment of his still chosen policy, rather than risk the consequences to be feared from the violence of opposing interests, advocates the adoption of the Compromise Act, and the question of the tariff is at rest for a season.

Slowly but surely, the reduction of the duties proceeds; gradual at first, but rapid as the termination of the Act approaches. Without apprehension of the coming evil, the banks of the country, with the bank of the United States at their head, stimulated by the desire of profit, and having no settled principles of action, and little knowledge of the laws of currency, advance in the career of increasing the bulk of the currency, but the substitution of mere credit in the place of capital—the States and public stocks without stint, which as American credit is yet unimpared, are appropriated to meet the balance in Europe, which increasing imports occasion, thereby hiding from observation the real condition of the country, and the catastrophe is ready for development before the nation is aware of its position.

Great Britain, with free access to our markets and an accumulating mass of our bonds in her hands, now determines to reduce the value of our great staple which keeps her spindles in operation, and enables her to control the commerce of the world. Then came the Waterloo of the contest—that noble man, whose power as the financier of his age, will one day emerge from its present eclipse, fought the battle bravely, but like the great captain of modern history, became at length the victim of circumstances beyond his control; the opposition of the government—the great fire at New York—but more than all else combined, the sure result of the Compromise Act, increasing the imports, and turning the tide of exchanges against us, like the rapid march of Blucher decided the day against him, overwhelmed the currency of the United States, burying beneath its ruin the credit of States, of Banks, and of individuals, and for a time his own fair fame. Death soon released him from the thraldom of undeserved obloquy, but posterity will inscribe his name on the same tablet with those of Morris, Hamilton and Dallas.

The tariff of 1842 began slowly to reconstruct the fabric of national prosperity in spite of the mass of ruins with which it was encumbered; but "free trade" has become the policy, not only of the Democratic party, but to some extent of the Whigs of the South, and extensively of the mercantile public; it will work its results and demonstrate its character, whether for good or for evil time will probably determine, since there is little hope, in the present state of public opinion, that any other policy can be introduced. It is however, wise to study the subject in the light of experience, that we may no longer grope in the dark like our predecessors, with no

clue to guide us through the labyrinth. If no public benefit shall accrue, and the nation is doomed to run again the melancholy road of excessive imports—contraction of the currency—panic—and suspension—private fortunes may be saved and individual suffering prevented.

A thorough understanding of the *science of currency*, is the key to unlock the mystery of national economics. Like all other subjects, currency must have a science, the laws which govern it may be known, and as it obviously lies at the foundation, and is the power which controls both national and individual wealth, it is idle to waste our efforts upon subordinate topics, until we understand the principles which govern the basis upon which all other interests rest.

Assuming that after thirty years of debate in the national councils, the question of a "protection" or "no protection" is still unsettled, there must be some defect in the principles, or the reasons for them, a misapprehension of the object to be attained; or after so long a debate, the problem would have been elucidated to such an extent as to leave little doubt respecting the policy which would result in national prosperity.

The arguments of the advocates of protection have been various. Among the foremost in the early history of the debate, was that of "the balance of trade." It was gravely argued that as the premium upon exchange with England was uniformly at nine or ten per cent., therefore the balance must be sadly against us, and protection was necessary that we might manufacture for ourselves, and thus prevent the inequality of exchange, and the evils consequent upon it. This argument, so obviously absurd, growing out of the assumption that the *pound sterling* was four dollars and forty-four cents, needs no further attention. It would have been a ruinous condition of exchanges if true, and it is not strange that it was adopted, since all elementary books, then as now, taught it to our children, and the government but recently abandoned the absurdity, which deducted nine per cent from every British invoice, and an equivalent amount of duty when ad valorem in favor of England and against every other nation. Next we had the argument "the necessity of protection to those pursuits whose products are essential to national defence." This had more show of reason, but if protection was necessary to those interests, then obviously to all which the public were not disposed to abandon. The present form of argument, is

"protection against pauper labor," which, as paupers do not labor, means protection against foreign labor and capital combined in manufactures, or it means nothing; and the term pauper may be relinquished without injury to the argument. The necessity of protection has been felt to be obvious, but unfortunately the real interest to be protected has not been apprehended.

On the other side of the question, we have had the glory and blessedness of commerce and agriculture, as the only pursuits worthy of freemen: mechanics are vulgar fellows, and to this hour the false sentiment pervades American society; to stand behind a counter and measure tape, is a more honorable avocation, than to construct a steam engine, or to manufacture broadcloth. All the miseries of the suburbs of Manchester were to grow spontaneously in American soil, if cotton spinning should ever get a footing in New-England. Then the "forty bale theory" had its day, and southern planters honestly thought that their lazy negroes were the originators of all the wealth of the nation. Now we have "free trade," as the grand idea which is to regenerate the world; minds of a high order in both hemispheres, are bitten with the mania; Cobden is feted through Europe; Mr. Secretary Walker is delivered of a report and overwhelmed with the pains of parturition, the distinguishing features of which are "free trade" and "the sub treasury." Let us return from this digression, and endeavor to find the true solution of the question so long debated.

The supply of national and individual wants, must result from *labor* and *capital* combined in the production of the objects and substances needed. Labor is first in the order of nature, and first in importance of their sources of wealth, and should be considered as emphatically the *primary* national interest. The substances and objects required, which we have the natural or acquired ability to produce, must come to us, either by production or exchange. The labor of society may be therefore divided into two departments, the one the labor of *production*, the other that of *exchange*; the former is occupied in the growth of raw produce and its fabrication into objects of necessity and desire, and the other in the transfer of these objects, the products of labor from the producer to the consumer. Both these forms of labor are to a degree equally important, but in the arrangement of national policy, the former should take precedence of the latter. In selecting the pursuits of national industry, the objects on which to employ our labor and capital, those should, if practicable, be chosen, which, by the general consent of civilized society

are the most profitable, or whose products in proportion to the labor and capital expended in their production, command the highest relative price.

It is a principle, established in all civilized nations, that *artisan* labor is more valuable than *agricultural*, and though from the necessities of our nature, in all countries, agricultural labor must occupy the great body of the nation, still it is artisan labor emphatically, which rapidly accumulates wealth whenever it advances to great development and consequent high civilization. This may be seen by a reference to nations as well as to individuals; the fact is rendered obvious by a comparison of the value of artisan and agricultural labor in all sections of our own country, as well as in Europe, while manufacturing nations are uniformly wealthy as compared with their agricultural neighbors.

It is quite too late in the day to decry the artisan as an inferior class in society, or to represent his pursuits as tending to its demoralization; the age of shepherds and shepherdesses has passed away. In Europe, as in this country, the morals and intelligence of the artisan class are in advance of the agricultural. This is a perfectly natural result of their more profitable employment; the condition of classes, as well as individuals, being determined by what they can command of leisure for their intellectual improvement, and of comforts and elegancies, as the reward of their labor.

Next, as agricultural and artisan labor produce the materials which the wants of society require; the more they can be brought into contact with each other, the less of labor will be required for their transfer from the producer to the consumer, and thus the general wealth be increased by avoiding the non-productive employment of exchange, the importance of which it is the habit of society to overrate.

The commonwealth, constituted of the general condition and property of the individuals who compose the nation, must be governed by the principles which are true in the detail. What is true in relation to the individual, must be true as to the public in all *productive* pursuits, and no individual or sectional department of labor can prosper, if that labor is productive, without promoting the interest of the whole commonwealth. The non-productive laborer may temporarily thrive upon the injury of society, the productive never; whatever he does inures to the public benefit in proportion to its value and importance.

These general principles indicate the true theory of political economy so far as the selection of pursuits is concerned, determine the points to which we should direct the general labor, and to this end all commercial policy should give place. If there are preferable pursuits, then to secure those pursuits to our own citizens, will certainly promote the interests of our own commonwealth; they demonstrate what is the true policy irrespective of the arguments to be derived from a consideration of *the currency*, where the argument becomes in our view irresistable in favor of the theory of "protection for the sake of protection."

The currency of a country, of whatever composed, whether of metal or credit, is an essential element of national wealth, and the most active agent for its production. Like the blood in the human system, it is the media of growth, the materials of which may be elaborated in the laborious stomach and diffused through the intestines, but until absorbed into the arterial system and vitalized into blood, there can be no proper or healthy increase. The currency, like the vital fluid, distributes all other forms of wealth from the point of production to that of consumption, assimilates all forms of wealth to their appropriate objects, constructs all permanent capital resulting from national growth, and having performed its functions, itself unconsumed, returns to re-perform its duties in the organism of society. This it does in the rudest forms of civilization, of which it is the earliest indication; but in the more advanced, when capital is accumulated, and its consequent, credit, begins to be developed, its importance and interest increase with every advancing step in the progress. Currency not only permeates society, but gives form and character to credit, the great agent by which society advances, and without which, capital would be of little practical value. It governs all existing obligations, and controls the relation of creditor and debtor, which the use of credit creates, with all the force of law, embracing within its sphere governments as well as individuals.

The defect of all modern reasoning on the subject of political economy, consists in a neglect and a misapprehension of the nature and the importance of the currency, and hence the failure to establish a science of political economy. That important public interest, the currency, being overlooked or misapprehended, legislators find their plans defeated, the results they had confidently anticipated, are not realized, a disturbance here being a disturbance of the vital functions which defeats all plans not framed according to their or-

ganic laws. If the currency is preserved steady, uniform and sound, society adapts itself to its volume with perfect quietude and freedom, never demanding more except as the commonwealth grows and produces it, and unable to do with less without severe suffering; reasoning upon national interests without reference to the currency, all the conclusions of statesmen are defective in an essential particular, and no result is reached which corresponds to experience, and hence in Europe as in America, after so long debate, great questions of national polity and finance are yet unsettled.

The currency of the United States, the convertible issues of banks, is the growth of more than half a century—commencing during the revolutionary war with the bank of North America, at Philadelphia, it has grown up with the nation, and has become an integral portion of the national wealth, and is so involved in all existing obligations, is so fixed in all the mental habits of society, that any essential change of its character is impracticable. It may be modified and rendered more secure by the introduction of a larger proportion of capital into it. The general government, by the adoption of a sub-treasury for the management of their small share of its general bulk, will attempt to alter its character in vain, it must remain of its present general extent and constitution, until the slow progress of investigation shall so modify the opinions of society, as to make a change in the constitution of the United States practicable, and induce the public to accept of the *national credit* as the basis of the currency, and the measure of value instead of gold and silver, as at present, if that shall be demonstrated to be the true theory for the construction of a currency. It is therefore, necessary, that in all *present* investigation, and in the arrangement of our national policy, we adhere to the existing currency, and govern ourselves accordingly. It is idle to reason upon the assumption that a change is practicable, by the introduction of a currency of metal, as is proposed by many opponents of a tariff of protection and by the sub-treasury, as it is entirely impracticable; the government, while the amount of its accumulated revenue is small, may blunder along adhering to the obsolete idea of a metallic currency, but all its efforts to reduce the general currency to the standard of metal, or to substitute metal in place of bank notes in general commercial action, will be found to be entirely futile.

Nor would the substitution of metal in place of our present currency, as is supposed, greatly change the relative position of our

affairs so as to prevent the evils to arise from a "free trade;" it would obviously modify them to some extent by the general reduction of values consequent upon the dimunition of the general bulk of the currency, but would leave us still exposed to the adverse action of the foreign exchanges, but while the currency remains, as it must continue to do of its present dimensions nearly, the issues of banks with a mere modicum of metal as its basis, so small that its contractile force is frightfully great, the obvious effect of a commercial policy, the tendency of which is to increase importations, or to *permit* them beyond the point at which they are *sure* to be met by exports of our own staple products, is to abstract the basis of the currency, and thus call into action its terrible power of contraction, to cut the arteries of the body politic, inducing syncope—death. As before observed, it is not material whether the currency is of metal, or credit depending upon metal for its vitality, the moment the imports exceed the exports, the balance must go in gold, reducing the currency if of metal, or destroying it if dependent upon it for its convertibility, thus reducing the community to a state of barter. The result is obvious and inevitable, and the violence of the action will be in proportion to the extent in which convertible credit is used as currency, and to the excess of the imports. In the United States, where the currency is almost entirely of convertible credit, and where credit, from the high rate of interest and the active habits of society is so extensively in use, it is the most consummate folly to place ourselves by our own commercial policy, in a position to be at all times liable to the convulsions which a rapid contraction of the currency involves; better to abandon all foreign commerce and shut ourselves up like the Japanese, depending upon our own efforts and the varieties of our own climate for the supply of our wants, than thus to live in constant fear of, and dependence upon the condition of foreign exchanges; but this is not at all necessary, all our really valuable commerce may be retained, and yet the evil avoided.

It will be replied, that imports will not necessarily exceed exports if no protective policy is adopted. The mere *pcssibility* of such a result should lead to the adoption of the most stringent measures to prevent it, even if it were not folly to desire the unprofitable trade of exchanging raw produce for manufacturers, the universal badge of a low grade of civilization.

Let us examine the relative positions of Europe and the United States, in order to decide the probabilities of equal exports and imports. Cotton we can export to the extent of our surplus; tobacco

the same, since soil and climate give us at present, the control of the markets of Europe. How long a period will elapse before the rapidly advancing civilization of India, aided by English capital, will create a successful rival in that home of the cotton plant, time will determine; wheat we can never export, except in the occurrence of a European famine; especially since the market of Great Britain is opened to stimulate its production in Europe and Egypt. As evidence of this, we have only to examine the statistics of former years, and even now by late advices, the price of wheat at Dantzic, is but a shade above that of New-York, with the advantage of a shorter voyage and lower freight in its favor; some small items remain, as ashes, cheese, lard, what else at all adequate to balance the exchanges which our rapidly increasing population will create by the consumption of European manufactures. We have in Europe, brought by the improvements in navigation, the power of steam, and by a net-work of railroads all terminating at its western shores, into close proximity to our market; a hundred millions of people pressed down by the remnants of feudalism and bad government, to a condition in relation to the comforts of life of which American citizens have not the faintest idea; they have acquired habits of economy and industry, which necessity has compelled, of which we know little—live principally upon vegetable diet, and are accustomed to toil fifteen hours a day; their labor market is overstocked, and their capital the accumulation of centuries is abundant, and seeking employment at low rates of interest; these millions are skilled as artizans, are rapidly increasing in intelligence, and are eager to grasp at any opportunity which may offer for the improvement of their condition. Among all these states of Europe, we find currencies whose relative volume is much less than our own, which is evidenced both by the price at which values are indicated, and by the proportion which the integer of currency bears to population; an item in the relative condition of Europe and the United States, which has never received the attention its importance demands. In our own country we have twenty millions of people rapidly increasing in numbers, comparatively wealthy, ready and disposed to indulge in the use of cheap commodities from Europe, which will be promptly presented to them by the active agents of European labor and capital located among us; and thus unwittingly will they pull down ruin upon their own heads—Taught by demagogues to believe that a tariff of protection is for the benefit of the wealthy, and to contemn the currency which has built up the country, they cry "down with the banks," utterly ignorant of the intimate connexion which exists between that currency, and the institutions, and obliga-

tions of the public, of the economical principles in connexion with it which lie at the basis of their own prosperity; and the ruin to their interests and employments which they invite. Can any one who has the least appreciation of the relative position of these masses, thus brought into collision, doubt the result? the European millions will belie their humanity if they allow us to enjoy our comparative ease and luxury, our *ten hours* labor and daily animal food, while they have their vegetable diet and fifteen hours of daily drudgery, if they can but have access to our market with the results of their labor and capital in open competition with ours.

The European famine of the last year, by a double action, increasing *our* exports and preventing *theirs*, has held back the avalanche which only waits the return of comparative plenty there, to decend upon us, not only from Great Britain, who by the recent change of her commercial policy, has reached an unread chapter in her history, the first lesson of which she has just learned in the revulsion of *her* currency; but from Germany and France when it is to be feared we shall learn again, unless a change of commercial policy is speedily adopted, the blessings of "free trade."

It is a remarkable fact in the history of opinions, that the idea of "free trade," should have taken so powerful a hold upon the public mind both in Europe and America. In spite of the strong tendencies to conservatism, and the firm adherence to old maxims characteristic of the species, we find the whole civilized world more or less affected with the idea, and especially is this true of the more enlightened and benevolent; the *dress* of the idea is its only recommendation, freedom is the talisman which now moves the world, and without examining its character, this base counterfeit has obtained currency; while we will not brook the most trifling interference of Europeans with our territory, or our institutions, we invite them to interfere in our industrial pursuits, as if an empty stomach would not inevitably reduce a man to the condition of a slave.

"Free trade," the legitimate offspring of infidelity, is begotten of its seminal principle, the denial of the depravity of human nature. Among benevolent beings, the whole object of whose life is the happiness of their fellows, "free trade" may result in the general good, but among *men*, "free trade" is but a modification of the licentiousness of *free property* and *free women*, abolishing all private rights, all the restraints of law, and tending to barbarism with all the force of human passions when left without restraint. As the individual *man* can make no progress until secured in his rights of

property, so nations can make no progress except by the adoption of the same principle, the preservation of their national interests by the protection of their improved condition from the attack of those who, either from bad government, bad institutions, or defective education, occupy a lower place in the scale of civilization. As it is only by competence and leisure to an extent sufficient to the cultivation of his intellectual nature and the education of his offspring, that the individual man improves and perpetuates his character, so nations, as composed of individuals, must enjoy competence and leisure, or *they* can make no progress; to lose these is to lose their civilization and relapse into barbarism, and this competence and leisure they are sure to lose, if open to the attack of those whose condition is below their own. Especially is this the case in the relations under consideration, from the present condition of European society, stimulated by the example of our progress to reach a position similar to our own. To attempt the elevation of the species by the abandonment of the gain which any portion of the race has acquired by superior intelligence, industry or virtue, is unphilosophical, as it removes the stimulus to effort which is furnished by the exhibition of the advantages enjoyed, and renders palpable the error which the benevolence of the advocates of a free trade has led them to adopt. It is only by preserving to those who may have acquired it, their preferable position, that the result they desire can be accomplished, that the race can be advanced in civilization.

Competence and leisure, the elements and the results of our improved condition of society, are especially incompatible with the antagonism of an inferior condition, when the numerical power of the lower class preponderates as in the relation of Europe and America. It is also an error to suppose the superior civilization of the smaller community, a reason for the removal of the protective barrier, or the assumption that by an increase of power arising from the advanced civilization, it will be able to hold its own in the strife. It is only by the abatement of the hard service to which individuals are subjected, that the improvement can be preserved and advanced, and this abatement of service at once confers an advantage upon the antagonist forces, the result of which is to overthrow the whole structure of the improved society, and reduce the whole to a common level. The working of this principle is obvious to every intelligent observer of the competition and its results, which arises between Americans and Europeans in any department of business in the United States, whenever the number of the latter becomes sufficient in any locality to demonstrate its results. The greater patience

of toil, the greater frugality, or rather the more powerful habit of submitting to a stinted supply of the necessaries and comforts of life, in fine the introduction of European habits into American society with its advantages stimulating their love of gain, enables them immediately to distance all competition, and drive their American competitors from the field. This is an inevitable evil which must be patiently borne; theirs are not the preferable habits, but we shall gain something in the improvement of our frugality, and the lapse of a generation will raise the European few to the level of our own position, and the wealth they accumulate will be added to our own stock of capital; but to subject the whole nation to the similar forces from the hundred millions of Europe, who are to draw *from us* the wealth their habits will create, will be a national suicide. Too much has been assumed for the superior capacity of the American in his contest with the European; this is to some extent true, but not to the degree presumed. The industrial pursuits of society, like the movements of an army, depend for their force and results upon the capacity of the few who govern, rather than upon the intelligence of the mass. In Europe cultivated mind abounds, and the application of science to productive employments, is advanced to a point beyond us in America, and there we lose much of the benefit of our more general improvement; and as labor is the origin of all value, wherever the greatest quantity is given by the mass for the privilege of existence, there, obviously, the relative value of its products must be least. There can be no uncertainty of the result in the open market of the world, between nations or communities, one of whom gives fifteen hours of daily labor in exchange for a stinted supply of the necessaries of life, and the other is disposed to refuse more than ten for an abundance; the strife may be protracted by adventitious circumstances, but eventually the ten hour man will be driven from the field by his more laborious competitor; there is an equality in human muscles which will insure the ultimate result.

In addition to his protracted labor, and his habit of submission to comparative destitution of the necessaries of life, with the absence of all intellectual culture for himself and his children, the European has the advantage of a diminished currency. All values in the civilized world are determined by their relation to *gold*, the universal measure of value, while we have adopted as our currency, the credit of banks, retaining however, and attaching great importance to its character of convertibility, which leaves us subject to all the general laws of a measure of gold with a currency far greater than the gold

which would fall to our share in its distribution. It is therefore obvious that the interest especially requiring *protection*, is not any description of labor, not the manufacturers, but emphatically *the currency*, next to that labor, and lastly capital; and it is precisely in this order that the influence of the want of protection is developed. First, the excess of imports induces a drain of metal, the basis of the currency; then follows a diminution of the demand for labor, the currency which kept it in demand by furnishing the means for its employment being withdrawn; next capital feels its force, the value of capital depending upon the activity and scope afforded to labor. The necessity for protection is not confined to any section of the nation, but is universal like the currency whose interests are primarily involved, and the sections of the country will be subjected to its influence just in proportion to the character of their respective currencies; most powerful where the currency is weakest, and the west and south, where the currencies are most expanded and least sustained by accumulated capital, suffer most severely by the revulsions occasioned by want of protection. The same principles are also indicated by observing the operation of an adverse condition of exchanges consequent upon the want of protection inducing excessive imports.

The effect is first perceived at the points of contact with Europe, the Atlantic cities, especially New-York, the great entrepot of foreign commerce. Exchanges, which should rule at nine per cent, or real par, rise to ten per cent, and continuing at that point, excite alarm in the timid capitalist, a slight contraction of the currency takes place, interest advances, and a ripple on the surface of the sea of currency is observed. Exchange advances to ten and a half per cent, specie begins to move towards the centres of exchange, the currency is farther contracted by the banks withholding loans, interest rises to a higher point, and the ripple is succeeded by a wave following its predecessor over the nation; exchange advances to eleven per cent, it is now profitable to export specie, alarm increases, the currency is now rapidly contracted, interest continues to advance, and nothing but the strongest securities will command money at any price. If nothing occurs to check the alarm, it becomes a panic; capitalists hoard, the banks struggle to reduce their liabilities, which only aggravates the evil, till their heavy depositors becoming alarmed, suspension closes the scene. No change in the real condition of the country has occurred, there has been no loss of *property*, capital is abundant, and the amount of the excess of imports is a paltry affair, compared with the general wealth or the sum of the domestic ex-

changes; it may be a few millions only, but it is sufficient to produce a scene of disaster and misery among the active and industrious portions of society, more terrible than would result from the *destruction* of capital to ten times the amount of the excess of imports. The public stand aghast at the result, and assign every imaginable reason for it except the true one; overtrading, excessive banking, private extravagance, and a multitude of similar causes which have no foundation except in the imaginations of those who would fain give some reason for so obvious an event.

The suspension of the banks by destroying the convertibility of the currency, which however by the necessities of the case, continues but imperfectly to perform its functions, prevents the further export of specie, except at a cost which absorbs the profit of imports, which must now be sold for an inconvertible currency, and the pressure upon the market having driven down the price of our staples, *they* become the more profitable exports. Labor has been suspended in all departments of business and irretrievably lost, the poor are reduced to more extreme poverty; the active and industrious have lost the small gains of years of toil, by excessive interest paid to sustain their credit, the depreciation of their stocks, or the foreclosure of mortgages has sacrificed their property at half its cost. The paroxism expends its force by the extinction of business, and the transfer of the property of the active and younger portion of society to the wealthy, and after a year or two of wasted labor, the industrious, who have weathered the storm, begin again with enfeebled energy, the process of reproduction. Gradually the wrecks are cleared away and the fabric of national interest is slowly reconstructed, and proceeds, till the same causes produce again the same results.

The Southern States of the Union are emphatically the opponents of a tariff of protection, though really more dependant upon it for their prosperity than the North, yet they view it as especially opposed to their interest. There is a semblance only of reason in the position they assume. They see the North comparatively prosperous, increasing in wealth, while with them it is to some extent otherwise, and hastily conclude that protection is the cause. While it is admitted that their "peculiar institution" has an injurious influence upon their economical interests, yet that is not the cause of their slow progress in wealth. The South are an agricultural people; their business is the growing of raw produce, to be exchanged for manufactures. As we have observed, it is an inevitable law of the civilized world, that such a direction of industry accumulates

wealth, if at all, by the slowest possible process. There is another incident to their position which has its origin in the currency of the United States, which more than any other circumstance, tends to render their industry unproductive, and prevents the accumulation of wealth which they reasonably anticipate from the many advantages of capital and labor which they enjoy. The *price* of their great staple—cotton—is determined by the European market, that taking the bulk of the product. The European price is fixed by the currencies of Europe, which, being as before observed, much less than our own, reduces the price of their staple to a point below that which would result if the currency of the market corresponded in dimensions to the currency of the country in which it is produced. On the other hand the cost of production, embracing the interest of capital and all the expenditures of the planter, are determined by the currency of the United States; it is obvious that this circumstance is highly disadvantageous to southern interests, especially to that portion engaged in the growth of that article. This will be more intelligible if we consider, that *price* is the value of a commodity expressed in the denominations of the currency—and that the currency of a country, being absorbed by its dealings, the quantity which can be appropriated to each transaction must bear the proportion to the whole, which the value of the article transferred bears to the value of all the articles to be transferred. If therefore, the bulk of the currency is large, price will be high, or in other words, the amount of the currency appropriated to the transfer will be large, if on the contrary, the bulk of the currency is small, the price will be low, or the quantity appropriated to the transfer will be small.

No greater fallacy exists than the supposition that there is any real measure of value in the civilized world which corresponds to the measures of length and weight by which a given quantity of *value* is indicated equally in all countries, like a given quantity of cloth or cotton. If gold only were used in all countries as currency, great inequality would still exist, arising from various causes; but since the introduction of currencies of credit, which to some extent exist in all the countries of Europe, and which constitutes almost entirely that of the United States, the want of equality in the measure of value is greatly increased, or in fact totally destroyed. The interest of the South is therefore obviously to encourage the manufactures of the North, till *they*, instead of Europe, become the consumers of the bulk of their product and govern its price, which will then be determined by a currency corresponding to the currency of the

producer: they would then buy and sell in the same market, and be relieved from their present disadvantageous position, the evils of which would be greatly augmented should they succeed in transferring the entire manufacture of their staple to Europe.

The evils which the south apprehend from the real protection of the manufactures of the north, the increase of the cost of their supplies, exists only in their imagination. It is a remarkable fact that *one* of the great manufacturing interests of the United States, has been from the commencement of the government, and is now thoroughly protected; it has been uniformly secured by a duty of from 1 to 200 per cent, ad valorem, is spread over the northern, middle, western, and to some extent, the Southern states; confined to no particular locality, and consuming the most general staple of the country, no section of the nation has deemed its interest invaded, none has ever supposed it injurious to national wealth, or imagined that any principle of constitutional law was violated by a duty of 200 per cent. Though thus steadily and effectually protected, domestic competition has so reduced its price, that it has become to some extent an article of export. We allude to the manufacture of ardent spirits, which by the tariff of 1846, pays a duty of 100 per cent, and in all former tariffs, has paid a duty equivalent to 200 per cent, ad valorem. This highest duty known to the present, and all former tariffs, is a *protection* to the *grain growing* interest, the removal of which would diminish the value of the rye and corn crops of the whole Union, probably 25 per cent, by throwing the quantity appropriated to that object upon the general market for subsistence. The south have paid this duty without a murmur, while they threaten a dissolution of the Union in view of a duty of half the amount upon iron, or cotton and woolen cloths; it can hardly be alleged that the duty has had a moral influence, and prevented the *use* of the article, nor should it be admitted that such an object would justify a violation of the constitution; the supply has been abundant, and cheap enough to meet the ability of the poorest, and the only effect in that direction, has been the substitution of a poor domestic for a better foreign article, and the introduction of delirium tremens into the catalogue of diseases; but its effects upon the general wealth of the nation has been immense, the value of the untold millions of gallons which has been consumed, has been retained and has gone to sustain the industry and increase the capital of our own commonwealth, instead of going to increase the wealth of the West Indies, France and Holland; the same results would have accrued had any

of the great interests of the nation, the iron, the woolen and cotton manufactures, or all of them received the same real and permanent protection; the currency would have been preserved, and the nation saved from the terrible revulsions which have so often overthrown its industry.

The *currency* therefore is the interest requiring "protection for the sake of protection," and not the manufactures; and in the preservation of that great national interest, the South, the West, the Middle and the Eastern States are equally interested, since without its preservation neither can prosper in their pursuits. The currency can be protected only by making the tariff a barrier of defence to the artizan, whose labor is the principal source of national accumulation. Agriculture, though a necessary is not a profitable employment—commerce is comparatively a non-productive pursuit, merchants are the mere brokers of society, useful within proper limits, but there is wisdom in the Chinese estimation of pursuits, which assigns to them the lowest place. The artizan is the source of national wealth, and his encouragement should be the leading object of national policy. Whenever the nation shall have learned to appreciate his importance and given him security for the protection of his labor free from the inteference of European rivalry, then will be seen what twenty millions of freemen can accomplish under the circumstances in which Providence has placed the American people.

OUTLINES OF A PLAN FOR A SMITHSONIAN INSTITUTE

"FOR THE INCREASE AND DIFFUSION OF KNOWLEDGE AMONG MEN," IN CONFORMITY TO THE WILL OF THE LATE JAMES SMITHSON, OF ENGLAND.

[From an Address delivered before the American Institute, by the Rev. W. Barlow, Feb. 10, 1847.]

I. OF THE FUND.

Let the Government charge itself with the purchase and maintenance of the library, museum, and gallery of art &c, if these projects must of necessity be persisted in, and thus relieve the Smithsonian fund of a burden foreign to its design. Let the original fund of $515,169, with so much of the interest which has already accrued thereon as would make up the amount of $700,000, remain in the Treasury of the United States, as a permanent fund, drawing interest at six per cent. per annum. This would yield for the purposes of the Institution, $42,000. Let the balance of the interest now on hand, say $57,298, be expended in the erection of a suitable building for the uses of the Institution, on grounds authorized to be taken for that purpose by the present act; but *not* so as to form a wing of the Patent Office. This amount would erect a building sufficient, but not showy. If the Government wishes for something in the way of architectural display, let it provide the means, but not enlarge to such dimensions as to waste the scanty income in repairs and attendance.

II. OF THE REGENTS.

Let the Regents of the Smithsonian Institution consist of the judges of the Supreme court, who compose the bench at Washington, with an equal number selected by themselves from among the sages of the land, who have become illustrious for their wisdom and virtue, and who have retired from the strife of politics. Let all vacancies by death or resignation, among the associates of the Judges, be filled by the election of the whole board; the vacancies on the bench of Judges being filled as by law provided. Let the board so constituted have perpetual succession, and possess all the necessary corporate pow-

ers, as the Smithsonian Institution. Such men as these Judges, with such other men as Albert Gallatin, James Kent, James Tallmage, would be inaccessible to the corrupt influence of party. In the management of the trust confided to them, they would give to the country the benefit of their wisdom; they would posess its confidence, and redeem its plighted faith. They should be invested with large discretionary powers, and should report to Congress at each session the doings and condition of the Institution.

III. THE EDITORIAL BUREAU.

Let the Board of Regents appoint the subordinate officers of the Institution; namely, two Editors and two Assistants; one of whom shall be the Corresponding, and another the Recording Secretary of the Institution. These officers should be selected from among the ablest men whose services can be commanded. Their compensation should be liberal. They shoud not be removable except for cause, and by the vote of a majority of the appointing power. The permanency of their appointments would be an inducement to bring all their faculties to their work, and to aim at the highest perfection in the duties assigned them.

IV. VOLUME OF PRACTICAL SCIENCE.

Let it be the duty of this Editorial Bureau to collect from all sources, all that is known touching the subjects of AGRICULTURE, MANUFACTURES, COMMERCE, ARCHITECTURE, ENGINEERING, THE FINE ARTS — in short, in all branches of productive INDUSTRY; to extract from the mass that which is best calculated to subserve the industrial interests of the country, and digest and arrange the same into a form adapted to popular use. Let a large *annual* volume, of 800 or more pages, octavo, be compiled, containing more or less upon all these subjects, so as to give to each volume the attraction of a rich variety. Let it be stereotyped in the best manner, with double sets of plates. Let the work be enriched and embellished with maps, plans, plates, engravings, illustrative of the matter contained in the volume, particularly natural history, mechanics, architecture, and the fine arts. Thus making it at once an invaluable compendium of practical science, and a book of beauty; adapted to the wants of the cottage and worthy for its elegance of the saloon of the palace. Besides the standard topics mentioned, other matters of science and general interest, improving to the taste and elevating to the character, might be admitted to enliven its pages. I would wish to have, in process of time the kingdoms of nature and art explored, to find the form

of truth and beauty to enrich that book. If, by reason of constant discussion, or the want of fresh matter, the standard topics should lose any portion of their interest, new life might be infused into the series by adopting works on collateral subjects. In default of native works adapted to this use, foreign works, like the Bridgewater treatises, might be admitted. Such an emergency, however, is not to be anticipated.

V. POLITICAL COLLECTANEA.

Let a second *annual* volume be compiled and stereotyped, in size and style uniform with the first, and constituting a political collectanea. It should contain a digest of the proceedings of the legislative executive and judicial branches of the general government; important state papers; abstracts of congressional reports; treaties; diplomatic correspondence; statistics; notices of internal improvements; notices of state legislation, with their most valuable documents; statistics of foreign countries; memoranda of their legislation, and current political history. It should be, in short, a current political history of the world, but especially of our own country; a panoramic view of nations as they exist at the passing moment. It should contain the cream of that knowledge which the freeman needs to qualify him to serve his country, whether at the polls or in official station. It shouls be *history taken from life*, by a sort of literary daguerreotype: a book of facts, compiled in the spirit of truth and impartiality; untainted by party prejudices; beyond the reach of party influences. I would wish it to become, in the process of years, a more valuable book of reference for the statesman than exists in any country: more full and elaborate than Niles' Register, and expurged from its dross; more general in its scope, and less encumbered with useless matter than Hansard's Parliamentary reports; more available for the present and future student of legislative history than Rymer's Fœdera. It should have the good qualities of all these, without their defects, and other good qualities which none of them have.

VI. PRELIMINARY SERIES OF VOLUMES.

And here I beg leave to suggest that, if such a current documentary history should be commenced, the design should be perfected, by the compilation of an *introductory series of volumes*, containing all the most important documents relating to the history of the country, from its first settlement; and especially from the middle of the eighteenth century. They should be uniform in style with the series above proposed, and embrace a great deal of matter for the gratifi-

cation of the antiquarian, as well as for the instruction of the legislator and historian. The Smithsonian Fund should spare nothing for this retrospective purpose; but the desideratum would be cheerfully supplied by the general government. England has set the beautiful example in her Fœdera. It could be compiled, stereotyped, and published, in the same manner as the Serials of the Smithsonian Institution as suggested below.

VII. METHOD OF PUBLISHING.

6. Let the use of the plates of the two Serials be granted, for a term of years, without charge, to such responsible publishers as would engage to supply all purchasers with the works, executed in a given style *at the lowest price*, and deliver the same for sale in such of the great cities of the union as shall be designated in the contract. As the compiling, stereotyping, and engraving, would be done at the charge of the Smithsonian fund, the purchaser would pay only for the *paper, press-work, binding*, and the small percentage which should of right constitute the *profits of the publisher*. If the two annual volumes were in matter and style such as I conceive they should be, and such as I have attempted to describe, they should be worth, at the ordinary rates, four and five dollars respectively; or at least eight dollars for the two. Without going into minutely accurate calculations, it would be safe to say, that they would not cost the purchaser more than three dollars. The balance of five dollars, in the intrinsic value of the books, would be in effect a donation from James Smithson. They would not indeed be worth that as merchandise, since all could obtain them at the same price; but they would be worth infinitely more then that, as sources of practical, useful, and indispensable knowledge, and which are not likely to be provided in any other way.

RESULTING BENEFITS OF THE PLAN.

Permit me now to enlarge on the benefits which would result from this safe, simple, and effective scheme, if it were carried out in its spirit, and to the letter.

IT WILL SUPPLY A DESIDERATUM.

1. It would call the two Serials into existence, and widely distribute them. A work of practical science compiled with ability, executed with elegance, keeping up with the progress of discovery, adapted to popular use, neither too desultory to instruct, nor too vol-

uminous to be read, is still a great desideratum for the laboring classes. A current political history, divested of party prejudice and misrepresentation, is no less necessary for the voter and statesman. Individual enterprise is little likely to supply these wants, on terms suited to the straitened means of the millions. But if they were furnished as here proposed, their intrinsic value would make them desirable to the wealthy; and their cheapness would bring them within the reach of the poor. I am of opinion that one hundred thousand copies would be sold annually; and as the population increased even that amount might be doubled;—I am tempted to say *quadrupled.*

GAIN TO THE LABORER.

2. To the laboring classes, the volume of practical science would be valuable as a source of pecuniary gain. It would bring to their aid the lights of science, and the results of experience. It would point out new and felicitous methods of operation in the shop and the field. It would lighten the labor of the human muscle, while it gave healthful occupation to the intellect. It would show them what others have done, and provoke them to noble emulation. It would suggest expedients to meet emergencies; and remedies for a thousand evils. It would wake indolence from its sleep, and turn industry into new channels. It would, in short, increase and diffuse practical knowledge, and thus help the toiling man in numberless ways; and it would be his own fault if he did not reap from each annual dollar the harvest of "thirty, sixty, or an hundred fold."

MENTAL IMPROVEMENT.

These volumes would serve a higher purpose than to increase wealth; and improve the mind as well as the condition. On two great branches of knowledge, they would contain all that the masses have the leisure to learn. The late act of Congress proposes to increase and diffuse knowledge among men by establishing a Museum, Laboratory, Library, and Gallery of Art in the city of Washington. *The present plan proposes to put the Museum, Laboratory, Library, and Gallery of Art into one of these Serials, and send them broadcast through the country, and lay them upon the tables of a million families.* More useful by the cottage fireside than a Lecturer from the University, they would discourse daily to its inmates of things useful and pleasing, without taxing their hospitality. They would be pored over by the bright eyes of childhood, and the dim vision of

age. They would furnish delightful occupation for the hours of leisure; turn aside the temptation which wounds the idle; give expansion to ideas narrowed by ignorance; cultivate a taste for solid reading; and make many a winter evening more charming than a morning of spring!

DEVELOPMENT OF TALENT AND GENIUS.

Their effect upon the future destinies of many young persons would be most salutary. Many are born with high capabilities, whom neglect and ignorance doom to obscurity, perchance to ruin. These volumes would find their way into the hands of thousands of these neglected ones, kindle in them the latent fires of genius, and call into action the faculties of a future race of Franklins, Fultons, Whitneys, and Wests. Napoleon owed his success mainly to his rare discernment of qualities, and his tact in putting every faculty of the millions to its appropriate use. Nations too, become great by applying the talisman of education to individual character; throwing down the barriers of inferior caste; and stirring in the bosoms of the young, the instinct which will guide them to the paths for which nature has fitted them. One of these volumes, well read, would impart more real knowledge and mental vigor, than all the novels in the language. Many a peasant boy will begin by spelling out in solitude the pages of these volumes, and will distance the college dunce in the end.

INCREASE OF GENERAL INTELLIGENCE AND WEALTH.

The benefits which would accrue to the country, would admit of no human estimate. To increase the intelligence of a people, is to promote social virtue and happiness. To enlighten private industry, is to augment public wealth. To call out the latent talents of all ranks, is to develope the true sources of a nation's glory. Such effects would, to some extent, follow from the adoption of this plan. Education among the masses, for the most part, ceases with the years of childhood; but these perpetual serials would furnish the means of a *continued adult education*;—the only means which can be made to reach the millions—the only education their labors will admit. While educating the man, they would mend his fortune, and put bread upon his board. They would lead to the exploration of new mines of wealth; enriching the country, by enriching the citizen. They would add millions to the common wealth, by improvements in agriculture—millions by the introduction of new staples—millions by extending and perfecting our manufactures, and that which is better than millions, by cultivating the national taste and conducing to the advancement of the *fine arts*.

PRESERVATION OF OUR FREE INSTITUTIONS.

Another benefit would touch the vital interests of the country—the very existence of its free institutions. If practical science would enrich it, sound political knowledge would tend to the preservation of its liberties. That political volume, destined to be read by the masses, like the book of judgment to the evil doer, would have terrors for the faithless ruler. Let it pay its annual visit to the workshop and farm-house, and in the process of a few years it would confer upon the honest laborer no slight pretensions to statesmanship. It would put an end to the reign of party despotism. It would cripple the power of a mendacious press to mislead and deceive the people. It would render the demagogue as impotent as he is base. It would bring honest patriots to a substantial agreement; and the great and the good would again sit in the seats of power. We might, by God's help, even retrace our steps from the fathomless gulf of foreign dictation, mob violence, Jacobinic misrule, and the ultimate despotism, upon which we are now advancing.

On the whole, we may affirm, I think, that the publication of these two serials would accomplish the object of Mr. Smithson. Instead of packing away five hundred thousand volumes in Washington city, in twenty-five years, *it would put ten times that number of volumes into the hands of the people themselves.* They would be "read, marked, learned, and inwardly digested." They would immediately and beneficially affect the character and interests of the citizen, and the safety of the country. They would be beautiful monuments to the memory of the philanthropist, whose honored name should stand upon every title-page, seen and read of all men. This spring of benefits to mankind would not dry up, while the government remained true to its trust; but flow on, widening from age to age: and many a great and prosperous family in future times would be able most truly to affirm that God and James Smithson had made them so.

ANSWER TO OBJECTIONS.

There are few things so good that men may not find objections to them; and the best projects fare as ill in this respect, as the worst. Objections will be started to the present plan. Let us imagine what they may be, and ascertain their solidity.

Since the funds are provided without drawing upon the treasury, the objection will not probably be pressed any farther that legislation in the premises is unconstitutional. If it were otherwise this

pretence would prevail. We should ask in vain for $30,000 out of $30,000,000 of our own treasury. Paltry politicians would cant about economy. Demagogues would demand credit for the vigilance with which they guarded the treasury from all but speculator. Patriotic statesmen would stand ready to defend the constitution with their hearts best blood, from the horrible violation of doing good. Fortunately all this is estopped. The government has accepted the trust; and it is too late to urge that it is unconstitutional to fulfil its engagements.

FUND NOT INSUFFICIENT.

It may be thought that the income would be insufficient. By no means, if we may have the whole. $700,000, yielding an income of $42,000, would allow, in round numbers: for the EDITORIAL BUREAU, $10,000; for stereotyping and engraving, $25,000; and for contingencies—expenses of regents, books, correspondence, light and fire, etc., $7,000. This is enough for the present. A portion of this formidable amount would go to American scholars, a portion to American artists, and a portion to American mechanics—all would go to reward talent and learning, labor and skill: and sad to say—nothing to the political parasite. This evil must be patiently endured. When useful things are to be done, useful men must be employed: as to the rest, they must content themselves with the millions of the treasury. Forty thousand dollars per annum is a mere bagatelle in the mass of party spoils; but it is a very great deal to be expended in good faith for the benefit of the people. Let it be appropriated in the way here indicated, and it will do us more good, more a great deal, than we now derive from all the national revenues. This fund is most sacredly ours. Let not our rulers covet it, let them extort no black mail—nor fritter away the funds upon useless projects and hungry politicians. Let the funds be charged simply with the erection of a small plain building requiring no heavy expenditures for repairs and attendance—with the salaries of the officers constituting the Editorial Bureau—the production of the plates—and the necessary contingencies; let this course be honestly pursued, and I repeat the averment—*the Smithsonian Institution will do the country more good, than all the millions of the treasury.*

GOVERNMENT TO DO NOTHING BUT TO ORGANISE IT, AND THEN LET IT ALONE.

It may be thought that this would make the government a kind of *publishing house.* It is that now; and expends much money in

AN ADDRESS

ON THE

Sanitary Condition of the Laboring Population of New-York

BEFORE THE AMERICAN INSTITUTE.

BY JOHN H. GRISCOM, M. D.

No duty can engage the attention of the magistracy of a city or State, more dignified in itself, more beneficial to the present generation, or more likely to prove useful to their descendants, than that of procuring and maintaining a sound state of the public health.

Of the three objects contemplated in the Declaration of Independence as necessary to be secured by government, the first named is "Life." Higher purposes cannot be conceived for which governments should be instituted.

As upon the condition of health of an individual are based his physical and mental strength, his ability for self maintenance, his personal happiness, and that of others dependent on him, and also his usefulness to his family, to the community and the country; and as the community depends for its prosperity upon the performances of its members, individually and collectively, in the measure of influence committed to them respectively, so does the health of the people affect the capacity and interests of the State.

As upon the individual, when sick, falls an increased pecuniary burden, with (in general) a suspension of income, so upon the State or city, must rest, not only the expense of removing an unsound condition of public health, but also from the attendant loss of character, a diminution of its resources.

When individuals of the pauper class are ill, their entire support, and perchance that of the whole family, falls upon the community. From a low state of general health, whether in an individual or in numbers, proceed diminished energy of body and mind, and a vitiated moral perception, the frequent precursor of habits and deeds, which give employment to the officers of police, and the ministers of justice.

These, among other considerations, together with the recent expression by the chief magistrate of the city of his interest in the sanitary condition of his constituency, by the recommendation to the Common Council of a measure of no ordinary importance to their welfare and comfort,* induce me to urge attention to a measure of improvement which has long impressed my mind, as one, above all others, demanding the action of the City Government.

When it was my pleasure, as it was my duty, in 1842 and '43, to devote my small energies to the sanitary improvement of my native city, stimulated by the consciousness of being engaged in a work heretofore untried in any systematic form, and promising results of the highest and most enduring interests to my fellow citizens, I seized the occasion to recommend to the Common Council the adoption of a measure of Health Police, which I thought of serious necessity. It was the last effort I was enabled to make upon the subject, before I was again consigned to the private ranks by removal from office. I then hoped to see the small beginning I had made, grow into shape and usefulness under the fostering hands of whoever might be my successors. But, in common with all who had the subject so much at heart, I have been disappointed; for not only was it untouched, but the seeds which I had planted were neglected, and suffered to rot in the ground. Another political revolution brought with it the hope, strengthened by loud professions of municipal reform, that at last the day was certain and at hand, when this subject would be no longer allowed to slumber, but would be regarded as one of the most urgent, and among the first, of the objects of attention by the new Common Council. The expectations of the public could not be mistaken; but an erroneous appreciation, or an entire misconception, in some quarter, of the duties and requisite qualifications of an officer of health, has deferred the hopes entertained of the further prosecution of this interesting, and vitally important, sanitary reform.

*Public baths.

The desire which stimulated me in former days was, however, not suffered to sleep in my bosom; a year's reflection, and daily and more extended observation, have not only confirmed my confidence in the feasibility, but increased the conviction of the necessity, of the measure I had proposed, and they have enabled me to modify, enlarge and illustrate the plan, while the determination displayed by the new chief magistrate to do *his* share of the reforms promised, has inspired me afresh with the hope that the present might be a favorable time for a renewed presentation of my favorite design.

It is a measure of SANITARY REFORM. It is designed to relieve the city of a part of the heavy burden of sickness and mortality, which now oppresses its population, more especially that portion least able to relieve themselves, and most requiring the interposition and protection of law. It will be seen to be a measure of humanity, of justice to the poor, of safety to the whole people, and of economy to the public treasury.

The objects of this communication, briefly stated, are these;—1st, to show that there is an immense amount of sickness, physical disability, and premature mortality, among the poorer classes;—2d, that these are, to a large extent, unnecessary, being in a great degree the results of causes which are removable;—3d, that these physical evils are productive of moral evils of great magnitude and number, and which, if considered only in a pecuniary point of view, should arouse the government and individuals to a consideration of the best means for their relief and prevention; and 4th, to suggest the means of alleviating these evils and preventing their recurrence to so great an extent.

Before proceeding to the explanation of the subject, it is necessary to understand the distinction between *Public Health* and *Individual Health*. In some senses these are different, in others they are similar, and have an intimate connexion. The difference depends chiefly on the cause being *personal* or *general*. Thus an individual may be made sick by causes which affect no one else, as in dyspepsia, ophthalmia, rheumatism, &c., and yet even these diseases, personal and peculiar as they seem to be, will sometimes be found dependent upon causes which affect large numbers at the same time. For instance, the well water, which we have heretofore been obliged to drink, was the frequent cause of dyspepsia, and some other complaints. Ophthalmia sometimes prevails extensively in asylums and hospitals, and at the Long Island farms it has several times proved a scourge,

while both it and rheumatism are frequent among the residents of damp and dark cellars.

Consumption is an instance of a disease of individual character, but which is, to a very considerable extent, in its commencement and progress, influenced by the circumstances surrounding the patient. The same may be said of scrofula especially, of which, indeed, many other diseases are only accompaniments or symptoms.

While there is scarcely a disease which may not at times become epidemic or endemic, there are some strikingly and uniformly so; ex. gr.: fevers of various kinds, as yellow, typhus, intermittent, and likewise small pox, scarletina, cholera, measles, &c.

Summer is the season generally deemed most prolific in diseases; the cause usually assigned for this is the heat of the weather acting upon animal and vegetable matter, producing more extensive and rapid decomposition, the gases from which are generally imagined to be so destructive to health and life. It is true that certain diseases prevail mostly during the hot months—these are yellow fever, cholera infantum, and the like, while typhoid and bilious diseases are frequent in autumn, the latter also attributable to the same causes. The quantity of these offensive vegetable and animal materials is, therefore, among other things, supposed to be, in a considerable degree, the generator and regulator of the intensity, of these diseases. But this is not by any means the whole of this subject. By a reference to some of the Annual Mortality Reports, it will be seen that sometimes as great a number of deaths occur during the cold months as during the hot. These are mostly of those affections attributable to the influence of a cold and of increased moisture, principally diseases of the lungs. To a certain degree this view of causes is correct, but in both cases, a well-directed enquiry into the condition in which people live, the position and arrangement of their working and lodging rooms, the character of their food, their habits of dress and cleanliness, the well or ill ventilated rooms they occupy by day and night, would, in this city, as it has done in other places, develope an amount of ignorance and inattention to the laws of life which would astound the most credulous, and fully account for the great and premature mortality of our citizens.

At all seasons of the year there is an amount of sickness and death in this, as in all large cities, far beyond those of less densely peopled, more airy and open places, such as country residences. Even in vil-

lages of small size, there is an observable difference over the isolated country dwelling, in the proportionate amount of disease prevailing; proving conclusively that the congregation of animal and vegetable matters, with their constant effluvia, which has less chance of escape from the premises, in proportion to the absence of free circulation of air, is detrimental to the health of the inhabitants.

These circumstances have never yet been investigated in this city, as they should be. Our people, especially the more destitute, have been allowed to live out their brief lives in tainted and unwholesome atmospheres, and be subject to the silent and invisible encroachments of destructive agencies from every direction, without one warning voice being raised to point them to their danger, and without an effort to rescue them from their impending fate. Fathers are taken from their children, husbands from their wives, "ere they have lived out half their days,"—the widows and orphans are thrown upon public or private charity for support, and the money which is expended to save them from starvation, to educate them in the public schools, or perchance, to maintain them in the work-house or the prison, if judiciously spent in improving the sanitary arrangements of the city, and instilling into the population a knowledge of the means by which their health might be protected, and their lives prolonged and made happy, would have been not only saved, but returned to the treasury in the increased health of the population, a much better state of public morals, and, by conseqence, a more easily governed and respectable community.

It is of course among the poorer laboring classes that such knowledge is most wanted. The rich, though they may be equally ignorant of the laws of life, and of the best means of its preservation, live in larger houses, with freer ventilation, and upon food better adapted to support health and life. Their means of obtaining greater comforts and more luxuries, are to them, though perhaps unconsciously, the very reason of their prolonged lives. Besides this, they are less harrassed by the fears and uncertainty of obtaining for themselves and families, a sufficiency of food and clothing. They are thus relieved of some of the most depressing influences, which tend to reduce the energy of mind and body in the poor, and render the latter more susceptible to the inroads of disease.

Sanitary regulations affect the pauper class of the population more directly than any other, because they live in situations and circumstances which expose them more to attacks of disease. They

are more crowded, they live more in cellars, their apartments are less ventilated, and more exposed to vapors and other emanations, &c., hence, ventilation, sewerage, and all other sanitary regulations, are more necesary for them, and would produce a greater comparative change in their condition. The influence of drainage upon the health and lives of the population, is too well known to require, at this day, any argument. Almost every one has heard of the effects of marshy soil, in country situations, producing intermittent fever, fever and ague, and of the entire disappearance of the disease, simply by draining off the water and permitting the ground to become dry. Its results in populous cities are equally well marked. The last instance which has come to my knowledge is one stated by Professor Buckland, that in St. Margaret, Leicester, England, containing 22,000 inhabitants, it appeared that one portion of it was effectually drained, some parts but partially so, and others not at all. In the latter, the average duration of life is *thirteen years and a half*, while in the same parish, where the drainage is better, though only partial, the average is *twenty-two years and a half*, showing the frightful effects of a bad atmosphere. It were easy to quote several instances, some important ones, from London statistics, but it is unnecessary, as I presume the fact will not be disputed, that sewerage and its kindred measures, exert a striking influence over the condition and duration of human life.

The investigations to which I have briefly alluded, as so necessary and desirable for this city, have been carried on in other countries, with a degree of enthusiasm, sustained by talent and learning, which does honor to philanthropy. No one can rise from the perusal of the works of Edwin Chadwick of London, or of Parent Du Chatelet of Paris, or of many others who have labored in this field of humanity, without feeling a portion of the ardor which inspires them, and wishing that he had been thrown into the same pursuit, that some of the leaves of the same laurel might encircle his own brow. It is the cause of humanity, of the poor, the destitute, the degraded, of the virtuous made vicious by the force of circumstances, which they are now investigating and exposing to the knowledge of others.

It is often said that "one half the world does not know how the other half lives." The labor of raising the veil which now separates the two halves, by which the misery and degradation of the one, have been concealed from the view of the other, has been theirs and their associates. Howard, called by distinction *the Philanthropist*, revealed to the gaze of the astonished multitude the interior of the prisons of

England, and straightway the process of reform commenced in them, and continued until the prison system of the present day, has become one of the most striking examples of the spirit of the times. But Chadwick and Du Chatelet, especially the former, are diving still deeper into the subject of moral and physical reform. They are probing to the bottom the foul ulcers upon the body of society, and endeavoring to discover the causes of so much wretchedness and vice, which fill the prisons aud work-houses. Howard's labor tended to *cure* the disease, Chadwick's to *prevent* it. These operations constitute a highly important part of the great work of melioration and improvement, in the condition of mankind, now going on, in nearly all civilized countries, and which characterize the present age.

If not on a par, in importance, with the improvement in education, which has of late made such rapid strides, it certainly is second only to it, and indeed it may well be questioned, whether improvement in the physical condition of the lower stratum of society, is not a necessary precedent, in order that education of the mind may exercise its full and proper influence over the general well-being. Teach them how to live, so as to avoid diseases and be more comfortable, and then their school education will have a redoubled effect, in mending their morals, and rendering them intelligent and happy. But without sound bodies, when surrounded with dirt, foul air, and all manner of filthy associations, it is vain to expect even the child of education, to be better than his ignorant companions, if indeed you do not, by educating him, give him an additional weapon, by which he may prey more successfully upon his fellows.

This country, and especially this city, it is hoped, will not much longer be behind others in this cause of the suffering poor and depressed humanity. Some movements, promoting this investigation, have recently been commenced, but much is yet to be done. The path has been pointed out to us by pioneers across the Atlantic; there is abundant disposition to pursue the object, which only requires to be sought out, and put to work by the authorities, to procure all the desirable results of such labours.

The system of tenantage to which large numbers of the poor are subject, I think, must be regarded as one of the principal causes, of the helpless and noisome manner in which they live. The basis of these evils is the subjection of the tenantry, to the merciless inflictions and extortions of the *sub-landlord*. A house, or a row, or court of houses, is hired by some person of the owner, on a lease of several

years, for a sum which will yield a fair interest on the cost. The *owner* is thus relieved of the great trouble incident to the changes of tenants, and the collection of rents. His income is sure from one individual, and obtained without annoyance or oppression on his part. It then becomes the object of the lessee, to make and save as much as possible, with his adventure, sufficient sometimes to enable him to purchase the property in a short time.

The tenements, in order to admit a greater number of families, are divided into small apartments, as numerous as decency will admit. Regard to comfort, convenience, and health, is the last motive; indeed, the great ignorance of this class of speculators (who are very frequently foreigners and keep a grog shop on the premises) would prevent a proper observance of these, had they the desire. These closets, for they deserve no other name, are then rented to the poor, from week to week, or month to month, the rent being almost invariably required in advance, at least for the first few terms. The families moving in first, after the house is built, find it clean, but the lessee has no supervision over their habits, and however filthy the tenement may become, he cares not, so that he receives his rent. He and his family are often found steeped as low in depravity and discomforts, as any of his tenants, being above them only in the possession of money, and doubtless often beneath them in moral worth and sensibility.

It is very frequently the case that families, after occupying rooms a few weeks, will change their location, leaving behind them all the dirt which their residence has occasioned. Upon this the next comers will sit down, being so much occupied with the hurry of moving, and with the necessity of placing their furniture immediately in order, that attention to cleansing the apartment is out of the question, until they are "settled," and then, if done at all, it is in the most careless and inefficient manner. Very often, perhaps in a majority of the cases in the class of which I now speak, no cleaning other than washing the floor is ever attempted, and that but seldom. Whitewashing, cleaning of furniture, or bedding, or persons, in many cases *is never* attempted. Some have old pieces of carpet which are never shaken, (they would not bear it,) and are used to hide the filth on the floor. Every corner of the room, of the cupboards, of the entries and stairways, is piled up with dirt. The walls and ceilings, with the plaster broken off in many places, exposing the lath and beams, and leaving openings for the escape from within of the effluvia of vermin, dead and alive, are smeared with the blood of unmen-

tionable insects, and dirt of all indescribable colours. The low rooms are diminished in their areas by the necessary encroachments of the roof, or the stairs leading to the rooms above; and behind and under them is a hole, into which the light of day never enters, and where a small bed is often pushed in, upon which the luckless and degraded tenants pass their nights, weary and comfortless.

In these places, the filth is allowed to accumulate to an extent almost incredible. Hiring their rooms for short periods only, it is very common to find the poor tenants moving from place to place, every few weeks. By this practice they avoid the trouble of cleansing their rooms, as they can leave behind them the dirt which they have made. The same room, being occupied in rapid succession, by tenant after tenant, it will easily be seen how the walls and windows will become broken, the doors and floors become injured, the chimneys filled with soot, the whole premises populated thickly with vermin, the stairways, the common passage of several families, the receptacle for all things noxious, and whatever of self-respect the family might have had, be crushed under the pressure of the degrading circumstances by which they are surrounded.

Another very important particular in the arrangements of these tenements must here be noticed. By the mode in which the rooms are planned, *ventilation is entirely prevented.* It would seem as if most of these places were built expressly for this purpose. They have one or two windows, and a door at one side of the room, but no opening anywhere else. A draught of air *through*, is therefore an utter impossibility. The confined position of the dwelling itself generally, prevents the access of the external currents of air, even to the outside, to any considerable extent. The window sashes, in addition, perhaps are so arranged, that the upper one (if there are two) cannot be let down, being permanently fastened up; hence the external air, poor as it is, cannot visit the upper section of the room, unless by opening the door, by which the interior of the room is exposed to view. If there is a sleeping apartment, it is placed at the extremity of the room farthest from the windows, is generally but little larger than sufficient to hold a bedstead, and its area is reduced, for air, by the bed furniture, trunks, boxes, &c., and having no windows, fresh air and sun light are entire strangers to its walls. In this dark hole there is, of course, a concentrated accumulation of the effluvia of the bodies and breaths of the persons sleeping in it, (frequently the whole family, several in number,) and this accumulation goes on from night to night, without relief, until it can easily

be believed the smell becomes intolerable, and its atmosphere productive of the most offensive and malignant diseases. There is no exaggeration in this description. I cannot too highly color the picture, if I would. What, then, will be thought of the condition of thousands of our fellow-citizens in the *winter season*, when every crevice is closed to keep out the cold air, and when I state, that what I have described, I have repeatedly seen and felt in the *summer*, when the windows and doors are opened to the fullest extent, day and night, admitting all the ventilation possible, small as it is.

I have had recent occasion to visit several of these pestiferous places, and I pen these paragraphs in the month of August, with their sight and smell fresh upon my senses.

The almost entire absence of household conveniences, contributes much to the prostration of comfort and self-respect of these wretched people. The deficiency of water, and the want of a convenient place for washing, with no other place for drying clothes than the common sitting and bed room, are very serious impediments in the way of their improvement. Without any convenient or safe place to deposit wood, or coal, or food in large quantities, all their purchases are by "the small," from the neighboring grocer, (who is perhaps the landlord,) at prices from 10 to 50 per cent. above the rates at which they might be obtained, under better circumstances.

But the most offensive of all places for residence are the *cellars*. It is almost impossible, when contemplating the circumstances and condition of the poor beings who inhabit these holes, to maintain the proper degree of calmness requisite for a thorough inspection, and the exercise of a sound judgment, respecting them. You must descend to them; you must feel the blast of foul air as it meets your face on opening the door; you must grope in the dark, or hesitate until your eye becomes accustomed to the gloomy place, to enable you to find your way through the entry, over a broken floor, the boards of which are protected from your tread by a half inch of hard dirt; you must inhale the suffocating vapor of the sitting and sleeping rooms; and in the dark, damp recess, endeavor to find the inmates by the sound of their voices, or chance to see their figures moving between you and the flickering blaze of a shaving burning on the hearth, or the misty light of a window coated with dirt and festooned with cobwebs—or if in search of an invalid, take care that you do not fall full length upon the bed with her, by stumbling against the bundle of rags and straw, dignified by that name, lying

on the floor, under the window, if window there is;—all this, and much more, beyond the reach of my pen, must be felt and seen, ere you can appreciate in its full force the mournful and disgusting condition, in which many thousands of the subjects of our government pass their lives.

"There vapors, with malignant breath
Rise thick, and scatter midnight death."

There are two features of a cellar residence which more especially render them objectionable; 1st, the dampness, and 2d, the more incomplete ventilation. In *any* cellar the impossibility of access for the heat of the sun to the parts of the soil adjacent to the floor and walls, and the absence of currents of air through the room, keep it much more damp than rooms above ground, where the heat and air have freer access. This is emphatically the case with *inhabited* cellars, inasmuch as the inmates are careful to exclude the external air, by closing all the avenues of its approach, in order to preserve the temperature high in winter and low in summer. The moisture, whose escape is thus prevented, is in itself a very prolific source of disease, and combined with the darkness and impure air of these places, is actually productive of a great amount of sickness. Could the sun and air be made to reach them, and were it possible to establish a sufficient ventilation through them, much of their noxiousness would be relieved; but under no circumstances can they be made fit for the residence of *living* beings; they are properly adapted only as receptacles for the dead.

In addition to these impediments to the drying of these places, they are very often so situated, that the surface water finds its way into them at every rain storm. It may be remembered that in the summer of 1843, all the underground apartments in many sections of the city were completely flooded by a deluge of rain. In the eastern part of the city, in Delancy, Rivington, Stanton, and many other of the neighboring streets, almost every cellar (and great numbers of them are inhabited,) were half filled with water. This evil will not recur to so great an extent, in the neighborhood alluded to, sewers having been built in some of the streets. But in other sections, indeed in every section, where the position of the basement is unaltered, and sewers are not constructed, the nuisance must be suffered at every rain storm. In some courts to which I can point, *the surface is below the level of the street*, and at every rain, the water being unable to run off into the street, is all discharged down

into the adjacent areas and cellars, keeping them almost constantly wet. It was but a short time ago I met with the case of a woman, the wife of a tailor living in a noted court in Walker-street, and occupying partly a basement, in which she was compelled to pass much of her time. She has lived there six months, four of which she has been sick with rheumatism, and on that account, unable to work. Otherwise she would be able to earn considerable by assisting her husband. They have four children depending upon them, and are obliged to seek assistance from the public, in consequence of this sickness. She attributes her disease to the water in the cellar, which runs in, and obliges her to bail out, and wipe up, at every storm. The money expended upon them in charity, would have rectified all this difficulty, have preserved the health and strength of the family, and saved all parties much trouble and suffering.

Another case is that of a woman with two children—her husband a laborer—living in a cellar in Lewis street, two months. Before moving to this place she lived in an upper room in Spring street, and was there always well, *but has been sick ever since she went to live in the cellar.*

Another applied for medical aid who lives in a cellar, *immediately adjoining which is the vault of a church-yard, the moisture from which comes through into the apartment, to such an extent, as obliged them to move the bed away from the wall.*

It is not a difficult matter for the Dispensary Physician, while receiving applications for medical aid at the office, to distinguish in a majority of cases, the cellar residents from all others, without asking a question. If the whitened and cadaverous countenance should be an insufficient guide, *the odor of the person* will remove all doubt; a musty smell, which a damp cellar only can impart, pervades every article of dress, the woolens more particularly, as well as the hair and skin.

At No. 50 Pike-street is a cellar about ten feet square, and seven feet high, having only one very small window, and the old fashioned inclined cellar door. In this small place, were lately residing *two families, consisting of ten persons,* of all ages.

Dr. Reid, the ventilator of the new houses of parliament, places the quantity of air necessary for the perfect, free and wholsome res-

piration of each adult person, at ten cubic feet per minute.* Others before him have estimated it as low as two cubic feet. I coincide with Dr. Reid in his statement of the amount necessary for the attainment and preservation of *perfect health;* but the latter estimate is entirely too low. If we take the average of these two extremes, (six feet,) we shall find that the ten persons in the cellar of 50 Pike-street would render its seven hundred feet of air, unfit for the support of health, *in less than fifteen minutes.* Now, suppose them to retire and close the door and window at ten o'clock at night, what must be the condition of the air of the room, when they rise at five the next morning?

Is it astonishing that the dispensary is called upon, very frequently, to extend its aid to these inmates? and should there not be some remedy for this dreadful state of things? The whole of these premises, besides the cellar, is in a condition unfit for human habitation, and yet crowded to a melancholy degree. A sanitary law that would reach this case, and be well applied, would save a large amount of life, health, money and morals. The same may be said of hundreds of other places, of which this is a fair average sample. There are many places still worse.

An inquiry into the amount of air allowed to children in schools, to the inmates of prisons, and to laborers in work-shops, will exhibit a degree of neglect, or ignorance, in relation to this vitally important subject, in individuals having the training and guardianship of these classes, truly lamentable, as well as surprising. For examples.

One of the Public Infant Schools of this city, having an average attendance the year round, of two hundred children, was for a long time, and until recently, kept in the basement of a church, the dimensions of which were $46 \times 30 \times 8\frac{1}{2}$ feet, equal to 11730 cubic feet. The proximity of the adjoining buildings rendered it so dark in a sunny day, it was difficult to see to write on a slate a short distance from the windows. A large stove warmed the room in

* "If we look to the fact that less than half a cubic foot of air passes through the lungs of an adult in a minute, this estimate may at first appear excessive, but if we remember, that at each expiration, a quantity of air is admitted, which mingles with an additional portion of air largely exceeding its own bulk, and that there are twenty such expirations in a minute, while provision is likewise required for the air that affects the surface of the body, and for the endless variety of minor effects produced by furniture, lightning, heating, refreshments, &c.; where no peculiar adaptation for these purposes have been introduced beyond those usually observed, it will be seen that the estimate is by no means immoderate. The real question is not, what the constitution can bear, but that amount which is conveniently accessible in ordinary habitations, and which is essential for the wants of the system."—ILLUSTRATIONS OF THE THEORY AND PRACTICE OF VENTILATION, BY DAVID BOSWELL REID, M. D.

winter. These children had about sixty cubic feet each, for the six school hours, equal to ten cubic feet per hour, when each child should have had ten cubic feet per minute. *Ventilation was unthought of*, until recently, and now in consequence of the position and arrangement of the building, it is very imperfect.

The dormitories of the House of Refuge have each an area of less than two hundred cubic feet. When the door is closed on the inmate, his bed, which is about eighteen inches from the floor, is extended nearly across the cell, diminishing by so much its atmospheric area, and intercepting almost wholly the communication between a very small opening at the bottom, and another at the top, and one in the middle, of the door. Those openings were intended, but are wholly inadequate, for ventilation, even if no bed were there. For the perfect decarbonization of the blood, the air in each dormitory, at the lowest proper estimate, will remain sufficiently pure for the space of thirty minutes only, yet the youthful inmates are locked in from 8 P. M. till 5 A. M., *nine hours, with no other ventilation than what I have described.* Their work-shops cannot be said to be much better supplied with air. The effects of this privation are plainly marked upon the countenances, and general physical development, of the children.

The general arrangement of the cells in the City Prison is but little if any better. Besides the small window near the ceiling on one side, air is admitted only through *five auger holes in the door* on the opposite side, and these latter are of no service at night when the inner door is closed.

We now naturally come, in the course of this enquiry, to two important questions, preparatory to the suggestion I intend to make, of a remedy for these evils.

1st. What is the effect of this degraded and filthy manner of life upon the health of the individuals, and the duration of their lives?

2d. What is its influence upon their morals, their self-respect, and appreciation of virtue?

The answer to these queries must have an important bearing upon the moral obligations, the pecuniary expenses, and the order and character of the City Government. If it can be shown that much sickness and many premature deaths are results of these residences

it will be evident that the care of the sick, and the support of the widows and orphans, must add greatly to the expenses of the city; and if it can be proved that degraded habits, bad associations and immoral practices, (though the results only of circumstances, not of education) are their consequences, it will be equally apparent, there will thus be continued, a class in the community more difficult to govern, more disposed to robbery, mobs, and other lawless acts, and less accessible to the influences of religious and moral instruction.

With regard to the first question, an argument can hardly be necessary. Almost every one can recall to mind, some proof of the effects of nauseous odors, of the inhalation of foul air, or of sleeping in a small confined apartment, upon his own health and feelings. These effects may have been only temporary, but they will serve to show that a prolonged continuance of them, must, in reason, produce permanently bad results upon the mental and corporeal powers. If the inhaled air (one great source of the life, health, and vigor of the animal structure) is deteriorated in quality, or diminished in quantity, below the standards necessary for a perfect decarbonization of the blood in the lungs, the blood necessarily becomes burdened with impurities, and fails to impart to the system the qualities demanded by nature for the due maintenance of health and strength. Every city resident who takes a stroll into the country, can testify to the difference between the atmospheres of the two situations:—the contrast of our out-door (to say nothing of the in-door) atmosphere, loaded with the animal and vegetable exhalations of our streets, yards, sinks, and cellars—and the air of the mountains, rivers, and grassy plains, needs no epicurean lungs to detect it. The superior corporeal activity, and the mental exhilaration imparted by it, are the prima facie proofs of its superiority. Compare the pale face of the city belle, or matron, after the long confinement of the winter and spring, with the same countenance in the fall, upon her return from a few week's tour to the Springs and Niagara, and observe whether the return of the long absent rose upon the cheek, is not accompanied with a greater elasticity of frame, and a happier and stronger tone of mind.

Descend a few steps further, from the airy and well-lighted chamber and parlor, to the confined apartments of the pent-up court, and the damp, secluded cellar; draw a contrast between the gay inhabitant of the former, and the attenuated tenant of the latter, and we may then judge of the influences of the air, which they respectively respire.

Observe, further, the vast difference in the development of frame, healthiness of countenance, and power of endurance, between the children of the farmer, and the offspring of the city resident.

A highly respected friend, a distinguished advocate, informed me, lately, that some of his children had not had a day's illness during the two years they had been at school in the country, while the others, residing at home, though in a comparatively salubrious position in the city, cost him from twenty to thirty dollars each, per annum, for medicine and medical attendance.

The following facts show, by figures, the sad condition in which a very large number of our people may be said, barely to exist.

As a great part of the population of these places are destitute of the means of paying for medical assistance, the duty of ministering to them in hours of sickness, falls upon the Dispensary Physicians. I find, upon examining the records of their labors, the reports of the three medical charities, for the year ending March, 1844, there were prescribed for at the offices and the homes of the poor, at the

Northern Dispensary,	13,317	Patients,
Eastern "	17,107	"
New-York "	23,858	"
Total,	54,282	

From this number a deduction is to be made of those vaccinated, being 4,505. In visiting the sick poor at their homes, however, it happens very frequently that some are prescribed for, whose names are neglected to be entered, so that it is perfectly safe to estimate the number of sick persons who received aid from these charities, to be *over* 50,000 *in one year*. In the corresponding year there were admitted into the Alms House Hospital 2,332 patients, and into the City Hospital, about 1,000, exclusive of seamen, making a total of over 53,000, without enumerating the sick poor attended by private charity.

This is truly an appalling statement. Those unacquainted with the number and character of the poor, would scarcely believe so great a number actually existed in this city, destitute of means, and there might arise an inclination to suspect an exaggeration of the statements, were not the names and residences entered at length on the registers.

Does it not become the duty of the magistrate and the philanthropist upon the presentation of such a statement as this, of the waste and havoc of the life, health, and strength of the people, to institute an inquiry into the causes of so great an amount of sickness, and to use every possible means to alleviate them?

Another fact developed by these reports is conclusive as to the influence of the causes to which I have alluded, of this great amount of sickness.

If the habitation of damp, dark cellars, and of narrow alleys and courts, and the breathing of a vitiated atmosphere, are *rightly* asserted to be promotive of disease, then those most subject to these causes should be sick in the greatest numbers. Now the *male* part of this class breathe a totally different air through the day, at their labors in the streets, along the rivers, or upon the buildings, and *only at night* are they subject to the worse atmosphere. Thus more than half their hours are passed under more healthful circumstances. Even the boys who spend several hours at play, or even in a partially ventilated school-house, follow an improved regimen in this particular. On the other hand, *the females, both night and day,* inhale the polluted atmosphere of the dwellings, and are more continually under all the other bad influences of their unfortunate situations.

Do the official results correspond with these premises?

It will be seen upon examining the Dispensary returns, that in some years the proportion of females to males, prescribed for at the Dispensaries, has been as 12 to 10½—in others, 12 to 8½, and in one instance as 19 to 11. This comparison is rendered more striking when we take into account the greater amount of intemperance among the males.

The Annual Reports of the City Inspector show that nearly one-half the deaths by consumption are of the *foreign part of the population,* and that more than *one-third* the whole number of deaths are of foreigners. Such an immense disproportion can only be accounted for on the supposition that some extarordinary causes of death prevail among the strangers who come to reside among us. Now it is a pretty well ascertained fact, that a large majority of the cellar and court population of this city consists of persons of foreign birth and their children. Of the Dispensary patients, about 60 *per cent.* are natives of other countries, and if it were possible to ascertain the parentage of the children receiving aid from these institutions, we

should find a larger proportion than this directly dependant upon foreigners. There is no doubt that 75 per cent. of them are either immigrants, or the children of such. Put these facts, then, side by side, and we are confirmed in the conclusion that the domiciliary condition of these poor beings, the confined spaces in which they dwell, the unwholesome air they breathe, and their filth and degradation, are prolific sources of an immense amount of distress and sickness, which in their turn, serve, by the loss of time, of wages and of strength, to aggravate the miserableness of their condition, to increase the danger to the public health, and the burden of public and private charity.

The evils thus resulting are occasionally exhibited in an endemic form, i. e., some disease of a marked character will break out and attack a considerable number of persons in the same neighborhood, the extent of its prevalence depending upon the extent of the cause, or the facilities for its propagation. Thus a fever may commence in a certain place inhabited mostly by the destitute and filthy:—if the adjoining tenements are occupied by the same class of persons, and kept in the same dirty and ill-ventilated condition, the tenants of the latter will be very liable to attacks of the same disorder. The disease will often be observed to pass houses in better condition, and re-appear at a distance, where similar causes prevail.

Frequently, too, the prevailing disorder, though perhaps covering a large district, will be seen only in certain parts of houses, as the cellars. Several instances of this have occurred in New York, one of which was the memorable Banker (now Madison) street fever of 1820. 562 blacks inhabited the infected district, of whom 119 lived in cellars; of these 119, 54 were sick of the prevailing fever, and 24 died. Of the remaining 443 who lived above ground, 101 were sick, and 46 died. Out of 48 blacks in 10 cellars, 33 were sick, of whom 14 died, while out of 120 whites, living immediately over their heads, in the same houses, not one even had the fever. Numerous other instances have occurred, which have attracted less attention, probably because of their frequency rendering them less notorious. But there is, as is well known to the physicians who move among these haunts of wretchedness, a silent agency continually at work, destroying annually the health and lives of hundreds of our fellow citizens, and entirely within the power of the city government to control or subdue, but which, by a strange neglect, appears to have been hitherto allowed to work out destruction unopposed.

I am enabled, by the kindness of some of my medical friends, to present a history of some of the endemic diseases which prevail in

the precincts to which I have alluded. The following communications contain the testimony of gentlemen thoroughly acquainted with the character of these places, and the condition of their inmates, and whose opinions are entitled to the most weighty consideration.

I will only add to their views, that disorders arising and fostered in these low places, will sometimes become so virulent as to extend among and jeopard the lives of better classes of citizens; while on the occurrence of general epidemics, these localities constitute minor streams, whose poisonous waters, as they mingle with the great river of disease, give additional impetus to its destructive current.

From John A. Swett, M. D., one of the Attending Physicians of the City Hospital.

New-York, August 12, 1844.

Dear Doctor.—The epidemic continued fever, about which we had some conversation a few days ago, occurred during the summer and autumn of 1837, at the time I was physician to the N. Y. Dispensary, and had charge of a district, embracing a part of the 6th, 10th, and 14th wards, being bounded on the north and south by Walker and Chatham streets, and extending east and west, from Allen to Mott streets. The first cases occurred, I think, in July, and the disease continued to prevail in the latter part of September, at which time I ceased to observe it, being myself attacked with the same disease, which confined me until the cold weather in December, at which time the disease had disappeared in the district.

The epidemic interesting me very much, the cases were carefully observed, and in many instances full notes were taken of their history. The number of cases which fell under my observation was probably about thirty—it is very possible it exceeded this. They resembled each other very much in their history, and the more so, probably, from the fact that they were subjected to a very simple and uniform treatment. The organs principally affected were the brain, and those of the abdomen. Delirium and stupor, with tympanitis, and abdominal tenderness, were very commonly noticed, and often in a very marked degree, although vomiting and diarrhœa were seldom urgent, and always easily controlled. The tongue always became dry as the disease advanced, and typhoid symptoms, although not in an aggravated form, usually appeared before the termination. I remember the frequent occurrence of rose colored spots over the abdomen, and that in some instances, they were so large and numerous as to constitute one of the most marked symptoms, resembling rather the eruption of roseola,

than the trifling eruption we frequetly notice in fever. Nearly all the cases recovered. I do not remember more than one or two that terminated fatally, and in these no post mortem examination was allowed. The treatment pursued was very simple, and consisted chiefly in attention to cleanliness, and to ventilation; the patients being allowed the free use of simple beverage, with the occasional administration of mild purgatives in some instances, and small doses of morphine in others; indeed fresh air as far as it could be had, and cold water, were the principal agents to which I trusted for the restoration of my patients, and I had seldom reason to regret my reliance on this simple means. The benefit of this mode of treating these cases appeared to me particularly marked during the convalescence, which was surprisingly rapid, and almost invariably commenced on or near the fourteenth day after the attack.

The poor population of this district was principally Irish and German, whose habits, as you know, are more or less filthy, and who lived crowded together, with a family in every room in the house, and sometimes more. I did not observe however, that the disease was decidedly more prevalent in those parts of the district which were most filthy and crowded, at least so far as individual houses were concerned, although if the district be divided into two equal parts by the Bowery, it is a remarkable fact that *all the cases*, I think without an exception, occurred to the west of this great thoroughfare, and it is quite certain, also, that the poor population is more crowded in this western division where the fever prevailed, than in the eastern where it did not exist at all.

The most striking circumstance that I noticed in this fever was, that in every instance (save one which I regard as a doubtful case) the disease existed *either in basements, or the first floor of houses that had neithcr basements nor cellars under them.* This circumstance early attracted my attention, and constant inquiry never enabled me to find any cases in the upper stories of those houses in which the disease was prevailing in the basement rooms, and yet these upper rooms were as full of people and as filthy as those below, and a more or less frequent communication existed between them. As a matter of course these basements were less exposed to ventilation than the rooms above, but this was not always the case. I remember, in particular, one old wooden house at the corner of two streets, without cellar or basement, in which the disease prevailed on the ground floor where the ventilation was excellent, and where filthy habits were certainly not observed. Indeed it has always been

my opinion that the cause of this fever was an emanation from the ground on which the dwellings in which it occurred were standing, and the principal reasons for this opinion I have already stated, viz: the abrupt and complete limitation of the disease in one direction at least, by the Bowery, and its occurrence only in the lowest rooms.

I remain truly yours,

JOHN A. SWETT.

From Stephen Wood, M. D., Physician to the Eastern Dispensary.

211 MADISON ST., 8th Mo. 17th, 1844.

DEAR DOCTOR—Agreeably to thy request, I have drawn up the following sketch of some cases, (which have occured in my practice as one of the physicians of the E. Dispensary,) illustrating in some measure, the influence of locality and mode of life on health and diseases, which thou art at liberty to use in such a manner as thou may think proper.

Sometime during the Autumn of last year I attended at No. 249 Stanton street, Charles Peterson, aged about forty-five years, of intemperate habits. He had pneumonia followed by typhus symptoms, and lived but two or three days after my first visiting him. He had been sick for several days previously, and without medical attendance. At No. 96 Sheriff street, and in the immediate neighborhood of this case, and at nearly the same time, I had another of like character, of about the same age, and of similar habits. This case likewise terminated fatally in the course of a few days.

In one of these cases the pulse was full and strong, so that I thought it best to bleed. The bleeding was followed by blisters, &c.; but it soon became necessary to resort to stimulants, and other supporting measures. In the other case bleeding was not practiced; but a blister was applied to the chest, expectorants, stimulants, &c., administered, although with but temporary relief.

Both of these men, with their families, were wretchedly poor, living in cellar rooms, some six feet below the street, dark and damp, with very scanty ventilation, and ceilings, or rather beams so low, that I could not stand erect between them. The apartments at my first visit were filthy and offensive in the extreme; yet some improvement became evident afterwards, as I generally in this class of patients, find it necessary in the first place, to lecture them on the importance of cleanliness, ventilation, temperance, &c.

I attribute the result of these cases, mainly to the situation, manner of living, and habits of the subjects. This at least was the conclusion I recollect I came to at the time; my attention having been arrested at the fatality of cases which at first appeared likely to have a successful issue, as I had often had others of a like nature, terminate well under more favorable circumstances.

The widow of the patient at 96 Sheriff-street, died last spring, with fever of a low form, in the same miserable house. *Subsequently at this house, a quantity of water was found under the flooring.* Lodgers were taken in there, and on one occasion, I found the owner, a colored woman, intoxicated.

Since her death, between one and two months ago, I attended a man of similar habits with the two cases above described, in an upper room of the same house with the two last, small, dirty, and badly ventilated. This also was a case of Pneumonia Typhoides, and ended in death.

I have had other cases in these premises at different times, and some of them have been attended, (indeed I may say *most*,) with symptoms indicating a low state of the vital forces, and they have been generally slow in convalescing.

All these cases occurred in colored persons. The building in which they were is only occupied by persons of this class; and most of them appear to be intemperate, and of the very lowest grade—"the offscourings of all things."

On the premises, and in the vicinity, are a number of vile grog-shops, at which these poor creatures obtain the means of their physical sufferings, and intellectual, moral and religious degradation, and too often, it is to be feared, their final and lasting ruin.

I rejoice, however, in stating that within a few months, a visible improvement has taken place in these abodes of misery, and in some of their occupants. This has been effected mainly by the health warden and street inspector of the ward (eleventh). One of the grogeries through their interference has been shut up, some of the rooms closed, and the inmates sent to Blackwell's Island.

In the course of my practice, I have had many forms of disease apparently caused and kept up by residence in low, dark, damp and insufficiently ventilated apartments. Yet I would not exclude the

influence of other sources of the "ills which flesh is heir to," particularly of deficient or improper nourishment and bad nursing; and frequently no nursing at all, especially among Dispensary patients.

The condition of the dwellings of many of the poor of our city, is a subject much needing the careful attention of the philanthropist, if not of our municipal authorities, who, it appears to me, ought to have a more watchful supervision of the tenements of this portion of our population.

Respectfully thy friend,

STEPHEN WOOD.

From R. W. McCready, M. D. late physician to the City Dispensary, and City Prison.

Wednesday, September 3d, 1844.

My dear Sir—If I apprehend aright the purport of your queries, you wish to know of me, whether I have met with any cases of infectious diseases occurring among the poor, which might have been prevented by proper sanitary regulations. In the summer of '42, a number of cases of Typhus fever, of a very severe type, occurred in a building in the rear of 49 Elizabeth-street, under circumstances which left no doubt as to its local origin. The front building, a small two story frame house, was partly occupied by the proprietor, or lessee, of the building, as a liquor store, and partly sub-let to several Irish families. A covered alley-way led to the rear building. This was a double frame house, three stories in height. It stood in the centre of the yard. Ranged next the fence, were a number of pig styes and stables, which surrounded the yard on three sides. From the quantity of filth, liquid and otherwise, thus caused, the ground, I suppose, had been rendered almost impassable, and to remedy this, the yard had been completely boarded over, so that the earth could nowhere be seen. These boards were partially decayed, and by a little pressure, even in dry weather, a thick greenish fluid could be forced up through their crevices. The central building was inhabited wholly by negroes. In this building there occurred, in the course of six weeks, nine cases of typhus fever. The two first taken resided on the ground floor, and both died. The others residing on the second and third floors, finally recovered. Two other cases, at least occurred among those who were temporarily in the house as nurses, or visitors, but as they were all at their own houses, these patients did not come under my own observation. The disease would un-

doubtedly have spread farther, but the inhabitants took the alarm, and the house for a time was deserted. At my solicitation the Alderman of the ward visited the building, the number of pigs about the establishment was reduced to that allowed by law, and chloride of lime, white-washing, &c. liberally, and assiduously employed.

I had three cases of Typhus in a back cellar, in the rear, I think, of 16 Marion-street, though it may have been 12 or 14. The cellar was ten or twelve feet under ground, the first floor of the house being a little elevated above the level of the yard, and dimly lighted (not ventilated) by one small window. It either had no communication whatever with the front cellar, or the communication was completely blocked up. A child was in the first place seized by the disease, then its mother, then a lodger who lived with them. They all recovered, but how, it would be hard to tell. No one appeared to come near them, save the visitor from the almshouse, and myself.

That typhus fever, generated in the first place under particular circumstances, may become highly contagious, is now, I believe, the general opinion of the best informed of the profession. A very striking illustration of this occurred in my practice. A young Irish woman who had come to this country with her husband and child, was taken with typhus at the house of her father, just after she had been landed from an emigrant ship. The family, at that time, resided in Madison-street. She had a very severe attack, and came near dying. Next, her father, who had been many years in this country, was seized. Then the child. The family now removed from Madison-street to Elizabeth-street. The greatest care was taken to preserve proper ventilation, cleanliness, &c. In despite of this, the disease successively attacked two younger brothers, the mother, two grown sisters, and an elder brother. I was in attendance in the family from Christmas, at which time I found the young woman who was first attacked, almost in articulo mortis, till May, when the disease, after having successively visited every member of the family, finally disappeared.

Yours, sincerely,

B. W. McCREADY.

Among the diseases most frequently resulting from an imperfection in the means of life, is *scrofula*, in its Protean forms. Dr. Watson, of London, the latest authority in the Practice of Medicine, in speaking of the general causes of this disease, enumerates as the most prominent, "Insufficient nutriment, exposure to wet and cold,

impurity of atmosphere, want of natural exercise, and mental disquietude. To estimate the separate effect of each of these causes, may be difficult, but their combined influence is unquestionable." After a considerable experience in Dispensary and Hospital practice, I hesitate not to declare, and believe I shall be supported in the opinion by my colleagues in the institutions with which I have been and am now connected, that *this disease is the great scourge of the pauper population.* It exhibits itself in the skin, in the eyes, the viscera of the abdomen and of the chest, in the muscles, and in the bones; in fact, every organ of the body, which is dependent for its healthy condition upon a sound state of the blood, (and there is no exception) may and does give evidence, differing in each case, of the influence of this degeneration, and the great prevalence of its producing causes.

The question will very naturally arise in the reader's mind whether much of the ills to which the poor are heir, is not produced by the necessarily restricted quantity, and impure quality, of their food. To this, I reply, that food in the varied imperfections of quality and amount, unquestionably constitutes one of the most frequent and powerful of the causes of human diseases generally. It is, under some of the circumstances of animal organization, no less important to the maintenance of life and sound health, than air, with, however, this great and essential difference, viz.: that an individual may exist several days without any additional food, but not three minutes without air. Further, if he is deprived of but one of the ingredients of the atmosphere, oxygen, instant death is the consequence.

I believe, however, it will be found, in a vast majority of cases, were food is properly accounted a cause of illness, this is produced by *too great a quantity being eaten,* or by an alteration of its properties by the refinements of cookery, and the addition of stimulating condiments. Plethora, and its long train of ills, are the results of over feeding, and over stimulation, but these are not the diseases of the poor. Among them we rather find cachexia,* scrofula, and all the consequences of debility and vitiation, which are far more attributable to an imperfection and paucity in the nesessaries of life, more especially of air, clothing and cleanliness. Dyspepsia, almost wholly the effect of improper dieting, is scarcely ever found in dispensary practice, while no disease is more common with the wealthier classes. All the ills for which the poor seek advice, whether pecu-

*A bad habit of body, known by a depraved or vitiated state of the solids and fluids.

liar to them or not, are aggravated, and altered in character, not by the food they eat, so much as by the air they breathe, and their other depraved physical circumstances of life. The sin of intemperance in eating cannot be laid at the doors of the cellars, and the entrances of the alleys and courts, while that of intemperance in drinking, though a dreadful addition to the horrors of his already too degraded physical and moral condition, is, with the ignorant and poverty-stricken troglodyte, a venial fault, in comparison with the pampered luxuriousness and equally injurious and intemperate, though more refined indulgencies of his wealthier and more responsible neighbor.

I conclude this part of my subject by calling attention to a few facts, illustrating the relative duration of life, of different classes of population; premising that, in consequence of the imperfection of our means in obtaining the statistics of vitality and mortality of our population, it will be necessary to go abroad for some of the facts which bear on this important enquiry.

It is ascertained that in civilized communities, one-fourth part of all the human race who are born, die before attaining their first year; more than one-third before arriving at five years of age, and before the age of twenty, one-half the human race, it is supposed, cease to exist. On referring to the last two annual reports of the mortality of this city, I observe that of the persons who *have died*, about the same proportion as is above stated, of all who are *born*, that is, about one-fourth died in the first year, about one-third before five years, *but more than one-half* before twenty years of age.

No facts could speak in louder tones of the injurious operations of the circumstances of civilized life. That one-half should die before arriving fairly upon the broad platform of strength, usefulness, and hope in the world, is the significant finger pointing with unerring certainty to the sins of ignorance, and abuse of the bountiful and unfailing means of life and comfort lavished upon us by Providence, which lie at our doors. Can this ignorance of the laws of health be excused, or can this abuse of Heaven's bounties be defended? There can be no justification for either in the eye of the Creator and Giver of all things.

The savages who live in the caves of the earth, because they have neither the knowledge nor means to build houses, are pardonable; yet their natural instincts teach them the uses and necessity of fresh

air and exercise. Yet we, who claim to be intelligent and civilized, who are taught the minutest particulars of nature's laws, suffer our numbers and strength, the bones, and sinews, and hearts of our people, to waste and die away in narrow and gloomy caverns of our own construction, with a rapidity surpassing that of the combined torrents of pestilence and war. Our sin is the greater that we permit these things in the midst of the light of science, and under the inspiring dictates of a religion, whose most prominent features are charity and love.

In the celebrated report of the sanitary condition of the laboring population of Great Britain, Mr. Chadwick gives the following, among other instances, of the comparative chances of life, in different classes of the community:

Truro.

No. of deaths.		Average age of dec'd.
33	Professional persons, or gentry and their families,	40 years.
138	Persons engaged in trade, or similarly circumstanced, and their families,	32 "
447	Laborers, Artisans, and their families,	28 "

Bolton Union, (manufacturing district.)

103	Gentlemen, professional persons, and their families,	34 "
381	Tradesmen, and their families,	23 "
2232	Mechanics, servants, laborers, and their families,	18 "

Bethnal Green, (manufacturing, chiefly domestic.)

101	Gentlemen, and persons engaged in professions, and their families,	45 "
273	Tradesmen and their families,	26 "
1258	Mechanics, servants, laborers, and their families,	16 "

In Liverpool, a commercial, and not a manufacturing town, where, according to the report of Dr. Duncan, 40,000 people live in cellars, and where one in twenty-five of the population are annually attacked with fever, the mean chances of life appear to be still lower than in Manchester, Leeds, or among the silk weavers of Bethnal Green. In size and character Liverpool is somewhat allied to New-York, hence its vital statistics are more particularly interesting to us, as more likely to approach ours in similarity.

Liverpool, 1840.

No. of deaths.		Average age of dec'd
137	Gentry, professional persons, &c.,	35 years.
1738	Tradesmen, and their families,	22 "
5597	Laborers, mechanics, servants, &c.,	15 "

The following shows the difference in the average duration of life, between the inhabitants of a manufacturing and of an agricultural place, and it will be observed that the *laborers of the latter attain an age equal to the professional people and gentry of the former:*

	Average age of death in Manchester,	in Rutlandshire.
Professional persons and gentry, and their families,	38 years.	52 years.
Tradesmen and their families, (farmers and graziers included with shopkeepers, in Rutlandshire,)	20 "	41 "
Mechanics, laborers, and their families,	17 "	38 "

This comparison exhibits very clearly the advantages of a pure atmosphere, out-door occupation, domicilary cleanliness, and above ground residence, Rutlandshire being distinguished for all these, and as a consequence, for a more orderly, steady and respectable population.

The influence of degraded associations, of habitual neglect of cleanliness, and prostration of health by impure living, upon the moral habits of the people, and as impediments to their social and political improvement, is a question with which I propose now to occupy the reader's attention for a brief space, in the hope, that if it can be shown that these are probable causes of misery and crime, there will be found herein an additional reason for the action of the city government upon the measures I or others may suggest for the melioration of the condition of those classes of the community more exposed to their influences.

Let any one ask himself the question, whether his own self-respect, his carefulness to avoid improprieties of conduct, and to maintain cleanliness of house and person, are not greatly enhanced by the examples of those around him. I believe it will not be disputed that the practices of those with whom we associate, by choice or compulsion, possess a decided influence over not only our own acts and habits, but over our thoughts and even our judgments. Circum-

stances govern our lives, and precepts for good are feeble, unless accompanied by the strong arm of example. "Example is better than precept," was the lesson taught us daily in our school exercises in penmanship. All society regulates the conduct of its members, and its phases of character are marked by their deportment and opinions.

The "outcasts of society" constituting a very numerous tribe, form societies of their own, and stamp, in a degree, the character of the community of which they are a part. We have, as have all large cities, numbers of them with us, but they should be regarded, not as such by choice, so much as by *compulsion*—as the creatures of circumstances beyond their control.

The tide of emigration which now sets so strongly toward our shores, cannot be turned back. We *must* receive the poor, the ignorant, and the oppressed from other lands, and it would be better to consider them as coming filled with the energy of hope for happier days, and more useful labors, than they found at home. No one, I presume, seriously believes they come with bad intentions, and then whose fault is it that they live here in cellars more filthy than the cabins of whose wretchedness we hear so much, and for whose existence, half the blame is thrown upon the government they have left.

Let us first cast the beam from our own eye. *We are parties to their degradation, inasmuch as we permit the habitation of places, from which it is not possible improvement in condition or habits can come We suffer* the sub-landlord to stow them, like cattle, in pens, and to compel them to swallow poison with every breath. They are *allowed*, may it not be said *required*, to live in dirt, when the reverse, rather, should be enforced.

This depressed physical condition, and these bad moral and social habits and propensities, to my mind, have an intimate relation to each other—they stand clearly in the attitudes of cause and effect. For instance, how often do we find poverty to be the instigator of theft, and immoral indulgencies the results of certain circumstances in life.

Men's passions are kept in check by the restrictions of the society in which they live. Remove those checks—take from the individuals the moral atmosphere in which they move, and their evil passions will rise.

In a family composed of several persons of both sexes, in circumstances admitting of their living in separate apartments, the restraints

of the circle of which they are a part, compel an observance of the separation of the sexes, and other social proprieties. They grow up habituated to correct deportment and moral restraints, which accompany them into all their relations of life. But confine that same family to one room, compel them to perform all their personal and domestic duties in view of each other, to sleep, dress, and undress in each other's presence, and can it be doubted that the nice moral distinctions so necessary to a life of virtue, will be greatly subdued, or overthrown, the heart be hardened against the teachings of the moralist, and the wave of lustful passion become of increased power? Yet this is the condition of hundreds of families, who would gladly escape the Maelstrom of morals which threatens to engulph them. And this is undoubtedly a principal source of the dreadful amount of licentiousness infesting this city.

As breathing an impure atmosphere will produce a depressed tone of bodily feeling and positive physical disease, so will a vitiated moral atmosphere, induce a relaxed state of moral feeling, and positively licentious habits.

Whence issue, in times of riot and tumult, the disturbers of the peace, but from the cellars and alleys, where they have never been taught to respect themselves, much less others.

If a family of good disposition be reduced by force of circumstances to occupy the same premises with numbers of others of a different character, it will be next to impossible to maintain their former tone of morals, or domiciliary cleanliness and order, and they must soon lapse into the same habits and feelings as their neighbors, adding thus their numbers to those who before swelled the list of the profane and evil disposed.

I have remarked upon the influence of the impure atmosphere, the damp and crowded apartments, and other circumstances upon the health of the poorer residents of New York:—the following extract from an able writer* must commend itself, in this connection, to the judgment of every right thinking man.

"Although it is most true that the calamity of sickness, or even of death itself, is nothing compared with crime, yet it is also true, that sickness induces poverty, which is one of the tempters to crime, and that a deranged condition of the physical system, often urges to

*Hon. Horace Mann.

vicious and destructive indulgences by the unnatural appetite which it creates, and thus ill health becomes the parent of guilt as well as of bodily pains. It exercises a powerful influence over feelings, temper, and disposition, and through these upon moral character."

It follows, therefore, that a correction of the physical, will tend to abate the moral, evils of the community.

It is well known that there has existed in this city for a series of years, an organization denominated the City Tract Society, which supports a number of Tract Missionaries, whose time is devoted to visiting the abodes of the humble and destitute, wherever the way may open, and carrying to them the words of moral and religious instruction—endeavoring to instil into their minds ideas of self-respect, and self-dependence, preaching to them temperance and virtue, enticing children to the sabbath and public schools, relieving with what means they may possess, the physical necessities of the poor, and performing all other deeds which a mind actuated by benevolence and Christian love may do. Many of these gentlemen have been a long time engaged in this work, and probably no body of men possesses more thorough knowledge of the localities of this city, of the condition of its inhabitants, of the influence of circumstances upon the tone of morals in all classes, drawn from actual observation, or of the alterations and additions required in the police and sanitary codes, for the improvement of the city at large, and in its various particulars.

To these gentlemen I have applied for their opinions, and such illustrations, bearing upon this topic, as their prolonged and valuable experience may be supposed to have furnished them. I addressed to them the following queries—the subjoined responses, selected from among a number, must carry conviction to the minds of all who read them, that an effort is demanded of government, benevolence and wealth, to remove the impediments now lying in the way of the physical and moral improvement of the destitute classes of this city.

Queries addressed to the Tract Missionaries.

1st. To what extent does the congregation of different sexes, and various ages of the same family of the poor in one apartment, influence their morals, and do they, or do they not, seem to place a lower estimate on moral character (though free from actual vice), than others, a grade above them in physical condition? In ther words,

have you observed an appreciation of morals and character graduated according to the circumstances and condition of life ?

2d. Have you found physical distress to present a bar to your moral and religious instructions, and do you think relief from their bobily ailments would enable you to be of greater service to the poor in your calling?

3d. Have you observed that personal and domiciliary negligence and filthiness tend to depress still more the moral sensibility, and make the poor more reckless of character—and do you believe that domiciliary and personal cleanliness, though combined with an equal degree of poverty, give to the individual or family more self respect, more aptitude to receive instruction, and more happiness ?

4th. If constrained by law to keep themselves, their furniture, clothing and dwellings, more clean, by frequent use of water and lime, do you think there would be a greater inclination to improve their associations, and obtain a better state of moral and social feeling ?

5th. In your opinion, would regular domiciliary visits by an officer of health, empowered to enforce a law to promote the cleanliness of house and persons, have any influence in raising the tone of feeling among the poor, as well as relieving sickness and prolonging life?

6th. Are there not many who would be pleased to be aided and instructed in the best mode of improving the condition of their dwellings, and be glad to receive the visits of such an officer?

7th. Can you relate any instances bearing on the subject, or applicable as illustrations to either of the queries?

From Rev. George Hatt, Missionary of 1st and 2d Wards.

Answer 1st. It is impossible to state to what extent a bad influence is produced by the congregation of different sexes in one apartment, but that it tends to debase the mind, and more especially in the female, prevents the development of that sensitive modesty which is her greatest charm, and her surest protection, I think no one can doubt. Still, in my opinion, it is unfair and incorrect to measure appreciation of character by outward circumstances, or condition of life. The many offices to which the one apartment must be convert-

ed, produces a want of neatness and personal cleanliness. A single fact will show some of the evils of the one room system. As a tract visitor knocked at the door of a room, he was invited in; he opened the door and entered, when, to his astonishment, he found a man entirely naked, sitting with his wife and children; the former was washing the shirt which the man had taken off. This was on a Sabbath day.

Answer 2d. Physical distress often prevents the poor, or indeed, any class, from being benefited by religious instruction. But on the other hand, it often softens and prepares the mind for its more ready reception; I believe the possession of the ability, judiciously to relieve the pressing wants of the poor, and to alleviate their bodily ailments, would be of great service in the attempt to elevate their moral and social condition.

Answer 3d. I should presume that recklessness of character *generally* precedes negligence and filthiness; for instance, I have known a man who had a happy home to become a drunkard; this vice soon reduced him from an industrious, cleanly man, to a reckless, loathsome being. His wife, too, having become discouraged, falls into the snare. Now the once happy home is a scene of filth and confusion. Go to work with that family, become instrumental in restoring them to sobriety and industry, and the change will be as apparent in the second instance as it was in the first.

As it respects the latter part of this question, I would add, that much, very much, depends upon the manner in which individuals are brought up. Some families will with six dollars per week, appear more respectable, and possess more self-respect than others with ten dollars, with an equal number in the family. The difficulty in most cases, is in the training. Hence the importance of educating the young.

Answer 4th. In my opinion, constraint by law ought to be on the landlord. No landlord ought to be allowed to let a place which is known to be unhealthy under a heavey penalty. There are thousands in this city, who are pent up in cellars with ground for the floor, into which I would not put a hog, if I wanted him to thrive. Last winter, I visited a place in Washington street, where in one such hole, thirteen persons were staying, four adults and nine children. At times the tide came in; it was always damp, and there was a woman sick with pleurisy.

Answer 5th. Then in reference to the fifth question, I would say, that the health officer should be empowered to levy the fine upon landlords who transgressed the law. The officer should be empowered also to remove the family into some healthy abode, taking care that the fine be enough to cover expenses, and that having done so, the unhealthy place should be locked up, and the key kept by the officer, until a guarantee be given, that if possible, the place be rendered habitable.

Answer 6th. I would recommend that the corporation build, and encourage the building of houses suitable for the poor, so constructed that each family may have at least two rooms; do this, and many of those evils which now exist will be done away, and the blessings of many who are now ready to perish, will come upon them.

From J. B. Horton, Missionary of the 7th Ward.

NEW-YORK August 23d, 1844.

DR. GRISCOM.—DEAR SIR—Your *questions* in relation to the demoralizing influences resulting from the *unhappy physical condition* of a multitude of families in this city—both as it regards the numbers of all ages and each sex, *jammed into one apartment*—that with some miserable additions to its list of uses reminds us of the poor cobbler's stall in the song, which " He us'd for kitchen, for parlor, for hall,"—and the negligence of personal and domiciliary cleanliness; with others concerning the best means of obviating those evils, requesting me to give such answers to each and all, as my judgment and experience shall dictate, with such illustration of facts, as my Missionary labors in this city for ten years past may have furnished, are before me, and shall receive due attention.

For I hail with joy any feasible project, or attempt, to meliorate the *natural* or *moral condition* of man, and especially of that class of my own fellow-citizens, who so far from reposing on beds of roses or down, seemed doomed to endless toil by day—and by night to lie down, perhaps in a crowded, uncleanly, and unventilated apartment, where before their slumbers are ended, the air has been so often inhaled, that it would need but little farther diminution of its vital qualities, to become *so foul* as to cause them *"to sleep, to wake no more."* And I rejoice, sir, that *you* have undertaken the task of presenting to the authorities of this city and the public, such views of the physical and moral condition of our city, and the appropriate means of im-

proving it in both respects, as will, I trust, not only do honor to your head and heart, but lead ultimately to such sanitary regulations, as shall make this great emporium of the commerce of the Western world, not only as renowned for *natural and moral purity*, as for the amount of her wealth and the extent of her commercial enterprise, but as the exuberent goodness of God in bestowing on her naturally a pure air, and civilly and artificially the free use of the Holy Bible and Croton water, has given her the means to be.

I now proceed to answer the questions propounded. And first, you inquire, "To what extent does the congregation of different sexes, and various ages of the same family of the poor, in *one apartment*, influence their morals, and do they, or do they not, seem to place a lower estimate on moral character, than others placed a grade above them in physical condition?" As it regards the *extent* of the evil influence on morals, arising from such herding together, of all ages and both sexes, it is impossible for me to determine, but that it is of most pernicious tendency, no one who has the slightest acquaintance with poor human nature, can, for a moment, entertain a doubt. Under such circumstances, it is impossible from the nature of things to prevent the instinctive modesty of youth from receiving a mortal wound, by a constant familiarity with scenes and sounds fit only for the greatest privacy—"For (truly) nature's blush by custom is wiped off."

And thus one of the greatest barriers and defences of chastity, is in the very morning of life overturned and destroyed; that jewel of such inestimable value, that the means of its preservation is worthy of the most profound consideration of the statesman and philanthropist. That the physical condition of an individual or a family, has a powerful and important bearing on the moral character, for weal or woe, needs no labor to prove; although neither of us has any idea of embracing Fourierism—the main doctrine of which, I believe, is, that most of the ills of life, as now experienced in the world, flow not from the moral obliquity of human nature, but from the *wrong, civil and physical* position of men. "Poverty and riches are both severe temptations," the latter, however, by far more dangerous, at least to the final and eternal interests of men. For though abject poverty may lead to brutal degradation, placing families even in Christian communities in circumstances as unfavorable to chastity, and the common decencies of life, as the Sandwich Islanders were previous to the introduction of Christianity among them by American Missionaries, when they slept in their *one apartment*, men, women and children,

with their hogs, "cheek by jowl!" Yet riches foster appetites and passions still more hostile to virtue and religion; hence it was averred by the Maker and Savior of men, that "it is easier for a camel to go through a needle's eye than for a rich man to enter the kingdom of God." Extremes meet—therefore I have made some of the foregoing observations, to show that every gradation in the circumstances of an individual or a family, from abject poverty to "*a happy mediocrity*," defined exactly in Agur's prayer, "Neither poverty nor riches," (which even the insensate infidel Tom Paine, had not the moral hardihood to deny as replete with true wisdom,) will have a good influence on their morals, but not beyond that point.

I have further to say in relation to this question, that though I have not the shadow of a doubt resting on my mind, as to the deteriorating moral effect of a large family embracing both sexes and all ages, being pent up in one apartment, where *all things* must be done *in common*, yet I have no striking facts as an illustration in proof to give, but have a distinct impression that where I have met with families so circumstanced, or among the abject poor, their moral sensibilities in some respects were very obtuse, and in nothing that I recollect more often manifested than the shameful nudities of children.

In regard to your second question, "Have you found physical distress to present a bar to your moral and religious instructions, and do you think their relief from bodily ailments would enable you to be of greater service to the poor in your calling?" I answer, that I have often found persons and families, in such circumstances of distress, from want of food and raiment, or by excruciating bodily pain, I thought it would be preposterous and vain to say much to them on the subject of religion, until their minds and bodies were somewhat relieved and disenthralled from the absorbing power of want and pain by physical appliances. And always under such circumstances, I have gone to work to procure food and clothing, or a physician and medicine, to prepare the way for moral and religious culture. And happy should I be if the facility for ministering to the poor and suffering were many fold increased, as it regards giving the worthy poor both food and physic; thereby increasing our prospect of being useful to them in religious matters. And I rejoice in the society recently organised in this city, by a truly intelligent and philanthropic class of our wealthy citizens, for "the improvement of the condition of the poor," who have already prepared the way for he Tract Missionary to exert the happiest influence on hundreds of families.

As proof that physical distress and bodily ailments present a bar to moral and religious culture, I have only to assure you, that the common answer given to missionaries by persons in such circumstances, when asked if they wish to seek religion, or avail themselves of the means of grace by attending church, or of Sabbath and public school instruction for their children, is this, "Oh, we are so poor—we have such trouble to get our daily bread—so destitute of comfortable and decent apparel, that we have no time to think about religion—cannot go decently to church, nor send our children to Sabbath or public schools."

In answer to your third question, viz: "Have you observed that personal and domiciliary negligence and filthiness tend to depress still more the moral sensibilities, and make the poor still more reckless of character; and do you believe that domiciliary and personal cleanliness, though combined with equal poverty, give the individual or family more self-respect, more aptitude to receive instruction, and more happiness?" I reply, that I have observed those families and persons who live habitually in squalid filth, negligent of personal and domiciliary cleanliness, like wicked men and seducers, wax morally worse and worse. And were it proper, I should like to introduce you to two such families, who are now prominently before my mind, for whom I have long labored, but apparently in vain, as it regards their moral reformation, while on the other hand I could introduce you to those who, though equally poor, yet careful about their persons and places, have received instruction gladly, and as we trust with lasting profit—and none can doubt for a moment that the latter class are by far more happy; though through a perverted taste, it may be possible for a savage "to glory in the deepest jet."

Your fourth and fifth questions involve so nearly the same thing—a mere requisition of my opinion, "Whether the interference of municipal authority—constraining by law, and law officers—the dirty and negligent, to take better care of their persons, furniture, and apartments, would subserve any valuable purpose, or raise a better tone of moral and social feeling?"—for brevity's sake, I shall consider and answer them as one, by saying that I can see no good reason why a State and city that have *legislated so immensely*, and sacrificed so much public and private property to establish and execute Quarantine Laws, (many of them of more than doubtful utility,) to prevent the importation of yellow fever, cholera and the plague into our populous city, should by any means judge it absurd or unnecessary to enact a few laws, and appoint a few officers to inspect

certain persons and places within the city, (with power to remove) where and by whom all those infectious and contagious maladies may be *manufactured*, and of such a quality, too, as to be perhaps more dangerous than those of foreign growth.

In regard to your sixth question, "Whether there are not many families who would like to be aided and instructed in the best mode of improving the condition of their dwellings, and would be glad to receive the visits of such an officer?" I answer, that the feeling with which such an officer would be received, must materially depend on the ability and tact with which he would discharge a duty so delicate—for delicate indeed it must be to interfere with the private concerns of any individual, however poor he may be—that claims to be *one* of the *independent citizens of the United States—one* of the *sovereign people!* However, I do not believe, though the task should be arduous, but that some such regulations might be introduced into our city, with the happiest results Yet I should perfectly despair of the success of any such sanitary measures if adopted, should those who have the power of appointing the necessary officers, manifest the same reckless indifference to their talents and attainments in medical skill and science, as we have sometimes heretofore had the misfortune to see manifested in the appointment of health officers.

I have now gone through with your questions, dear sir, and answered them according to the best of my ability, and the limited time allotted me; but not perhaps in a way that will be satisfactory to yourself, or available for the public good. You will, however, I have no doubt, in your kindness, take "the will (in this instance) to serve," for the deed.

But before I close this already long communication, I beg leave to suggest to you one thing to be brought forward in some part of your work, viz: to show the far greater propriety and necessity of having an Inspector General, with plenty of sub-officers, who shall determine *where*, and *what kind* of a *house* shall be built for a human being, or a family to inhabit; and how much room—and how many rooms, shall be rented to families consisting of so many persons, and such sexes, than an inspector general and his posse, to examine dead beef and pork, flour, tobacco, &c., that nobody is forced to buy or use if bad, while the poor are literally forced by poverty and griping landlords, to live in dens and holes, where immorality and death are speedily engendered. Yet still farther and *above all*, do, my dear

sir, bring out most prominently the absolute futility of any sanitary measures, for the health, or morals of this city as a whole, until that *curse* of *all curses* most direful, that most prolific source of *poverty, crime, disease* and *death*, "intoxicating *drink*," be considered and treated legislatively and judiciously as a most dangerous, deleterious, and deadly poison, and those who make and sell the same as a beverage for gain, as unworthy, not only of the name of christian but of man, and should henceforth be ranked with fiends—and those who drink it as such—as maniacs, and fools, and treated accordingly.

With great respect, yours,

J. B. HORTON.

From Samuel Russell, Jr., Missionary of the 8th Ward.

New-York, Aug. 26, 1844.

Dr. Griscom—*Dear Sir*,—Whether the sentiment of the great Teacher, "The poor ye have always," is the mere record of an important *fact* or a *prediction*, I shall not stop to inquire; one thing, however, is certain, it ever has been, and is now, a sentiment of *truth;* and a true disciple of that teacher, will rejoice in any efforts of others, and contribute his own, for the well-being of that large class of community.

Having been engaged for several years in labors for the benefit of the poor, the following opinions have been formed, and are submitted in reply to your series of questions; hoping that they may, in some humble measure, subserve the best interests of that class whose servant I am, and hope to be, during the remainder of my life.

1st. The instances are many, in which one or more families, of from three to seven or more members, of all ages, and both sexes, are congregated in a single, and often contracted apartment. Here they eat, drink, sleep, wash, dress and undress, without the possibility of that privacy which an innate modesty imperatively demands; in sickness or in health it is the same. What is the consequence? The sense of shame, that greatest, surest safeguard to virtue, except the grace of God, is gradually blunted, ruined, and finally destroyed. Now scenes are witnessed and participated in, with a countenance of brass, the very *thought* of which, once would have filled the sensitive heart of modesty with pain, and covered its cheek with burning blushes. The mind of one thus brought in daily and nightly

contact with such scenes, must become greatly debased, and its fall before the assaults of vice rendered almost certain.

In reply to the latter part of the question, allow me to say, that neither extreme of society is favorable to the highest appreciation of morality. The rich man who delights in sinful indulgence, and retains his position in society by his gold, places really no higher estimate upon virtue for its *own sake*, than the veriest wretch, who in the eye of day, wallows in the very mire of moral pollution. From such a one, to him who retains his place among his fellows by his *virtues*, there is, doubtless, a regular gradation in the appreciation of morals and character.

2d. Physical distress often introduces me to the acquaintance of families, when if they were in other circumstances, access to them might not be obtained; yet before any moral or spiritual instruction will be regarded, the wants and ailments of body must first be cared for.

Before the formation of the "Society for the improvement of the condition of the poor," my usefulness was greatly curtailed from the impossibility of ministering to the physical wants of the poor; now it is otherwise, thanks to the noble men comprising that society.

3d. This question, I answer unhesitatingly, in the affirmative.

4th. The law of kindness in the heart, and the words of sympathy upon the lips, afford the surest avenue to the confidence of the poor, and will succeed when legal coercion will utterly fail. Use the former when you *can*, the latter when you *must*.

5th. The success or failure of such visitation would depend very much, if not entirely, upon the character of the officer, and his manner of performing such visitation. If possessed of a kind and affable manner, and if a desire for the comfort and permanent good of the poor were discernible in all his deportment, he would hardly be regarded as an officer of law, but as a friend to be confided in, and his instructions appreciated and followed—if otherwise, he would be looked upon with mistrust, and probably resisted.

6th. This question I answer in the affirmative, provided the officer possess the qualifications named in the reply to the fifth query; and also provided the expense be borne by the landlord, or the public—otherwise, in the negative.

7th. A multiplicity of cases bearing on this whole subject have led me to the conclusion to which I have come, and have expressed above; but no particular one now occurs to my mind, of sufficient interest to warrant being repeated here.

The published reports of the "City Tract Society," in numerous instances, show what means *have* resulted in the *elevation of the poor*, and to those documents I would beg respectfully to refer you.

Yours, &c.,

SAMUEL RUSSELL, Jr.,

Missionary, 8th Ward.

From Jno. H. Bulen, Missionary of the 13th Ward.

New-York, August 20, 1844.

Dear Sir—The subject of your recent note, making certain inquiries, is one of no ordinary interest to any one who is endeavoring, in a sphere however circumscribed, or by means however humble, to be instrumental in elevating the moral condition of man.

The intimate relation of the moral to the physical condition, may not be so easily and precisely defined, as practically understood; and perhaps your end will be as fully attained by eliciting the results of experience, as by any fine wrought, philosophical disquisition of that relation. I am truly glad you have taken the subject in hand. I have long wished that some one, able to make his voice heard by the community, would speak out in language to be understood. Should you succeed in awakening an interest in the community, which shall result in the domiciliary renovation at which you aim, you will need no reward but the rich consciousness of having rendered valuable aid to the philanthropic enterprises of the day.

Nearly ten years' constant intercourse with the poor of this city, has fully convinced me that no greater obstacle is presented to their moral elevation, than that want of self-respect, and recklessness of character, induced by associations almost impossible to avoid, under existing arrangements, when very much reduced in pecuniary circumstances.

Suppose a respectable mechanic or merchant reduced by unavoidable misfortune to penury. He must leave his comfortable home. Accustomed to fulfil his promises, the least possible promise for rent will, in his opinion, be the best arrangement for the present; and, however the hearts of those accustomed to domiciliary cleanliness and comfort, may sicken as they enter where twenty or more families are domiciled on the same lot, with passage and yard conveniences common to all, yet they will make a virtue of necessity—it is a shelter—its walls encircle all now dear to their hearts—and most prized of all, perhaps, because it hides them from their acquaintances of more prosperous days. They, of course, purify their narrow home, and, as far as may be, make it comfortable. When weary nature must have rest, their one room, which has served both as kitchen and parlor, must also be their place of retirement.

What modesty would recently have shrunk from, must now be submitted to, and once submitted to, is ever after less and less painful. Then commences a deterioration of moral perception. It is impossible for one, of so many families, to keep the places common to all, clean and orderly; and what is habitually witnessed in the halls and the apartments of neighbors, will soon be permitted, for the present, in their own, especially as none accustomed to other appearances will probably be their visitors.

This downward course is so rapid, and the result so certain, that few will fail to discern the cause. Yet as the influence of this physical and mental condition upon the moral susceptibilities, may not be so apparent, there may be a necessity for saying, in answer to your first inquiry—that I have observed a depreciation of susceptibility of moral and religious teachings, towards either extreme of society; but as the poor are more accessible, my opportunities have been almost exclusively confined to that extreme. With this explanation, I answer, unhesitatingly, that I have observed, with, perhaps, no more than the usual exceptions to a general rule, a graduation of appreciation of morals and character, according to physical condition. And in answer to your second, that I have often found an obtuseness of perception induced by physical condition, and an insuperable bar to moral and religious instruction. And to your third—that I have no doubt that domiciliary and personal cleanliness would increase self-respect, and an aptitude to receive moral and religious instruction, while their negligence would diminish them.

To your fourth and fifth inquiries, I may be allowed to answer, that compulsory measures in relation to domiciliary arrangements

are ordinarily, peculiarly unwelcome, especially to the poor, who are usually jealous over what they conceive to be their now too circumscribed rights. And yet so little of the responsibility of the accumulated impurities of their crowded habitations rests on a single family, that I think I may say in answer to your sixth inquiry, that the majority of them would be glad to receive official aid and instruction. There are, probably, but very few who do not think they would be glad to live more cleanly, if their neighbors would render it possible by doing so too. Any improvement, although constrained, would undoubtedly increase their self-respect, and, of course, their happiness, and facilitate the efforts of those who are endeavoring to advance their spiritual interests.

Most of the cases of which I have kept any record, would rather illustrate the influence of improved morals on physicial condition. And yet there is no doubt of their reciprocal influence. Not unfrequently, the commencement of the elevating process is the relief of some physical distress, such as feeding the hungry, clothing the naked, or healing the sick, by the use of such means as the benevolent supply; always endeavoring to keep before the mind those great truths on which we rely, through the efficient agency of the Spirit, for moral renovation.

As an illustration of the depreciating process alluded to in your first inquiry, I recollect a case in point, although not recorded. An intimate friend of mine was acquainted with a young lady, about thirty years ago, then moving in good society, with moral susceptibilities, and a refined, discriminating sense of propriety, somewhat above mediocrity. At about the age of twenty-two, she married, as was thought, respectably. A few years proved that the husband's morals and habits were not such as to secure respect or independence; and they gradually sunk, and my friend lost sight of them.

About six years since, a child was brought by a Tract visitor, from a filthy cellar, and put into the Sabbath school class of my friend, who, upon learning the name of the child, visited the mother, and found her to be the same person known years ago as a lady of refinement. She had now lost all ambition; her husband was a worthless inebriate; her children, with countenances of promise, were, like their mother, completely at home in their most miserable apartment, rendered exceedingly so by neglect. Her moral susceptibilities were as entirely changed as her physical condition. Religious truths seemed to make no impression upon her mind—her heart seemed

callous Speak of her early life, and the fountain of feeling seemed to break up, and the tears would flow. A deep impression rests upon my mind, that lost as she was, if she could have been placed in circumstances of comfort and cleanliness approximating to those of her youth, the probabilities would have been in favor of her moral renovation. As this was beyond my reach, attention was turned to more hopeful cases, alas! in too many instances to meet the same disappointment from the same cause, and she was again lost sight of.

Truly, yours,

J. H. BULEN.

From Rev. Isaac Orchard, Missionary of the 15th Ward

BEDFORD STREET, August 20th, 1844

DR. GRISCOM—DEAR SIR—In relation to the questions you have proposed, I would group together the 1st 2d, and 3d, as relating to a prevalent evil, and the 4th, 5th, and 6th, as relating to a proposed remedy; and this I do the more readily, because the points suggested under the former class, appear to me to be almost self-evident, and the remarks I may make upon the latter class, may be more conveniently made upon the three questions collectively, than singly.

1st, 2d, and 3d. The extent, concerning which the first question inquires, is, I fear, very great, and frequently leads to actual evil. To the points suggested in these questions, I would give an affirmative answer, regarding them all as general rules, liable to some exception. Thus a person of coarse mind and manners may be found associating with the refined and polite, or a refined and polite person with the ill-behaved and uncouth; but it is not there we would seek for them. Applying whatever experience I have obtained on this subject, I am induced to regard it as a general law of our nature, that minds and manners should take an impress from those with which they associate; and this is painfully evident in many cases, where we observe those who have fallen from opulence, fashion, and high standing, into poverty. Suppose a lady accustomed to luxury and elegant society, so reduced that she has to earn her living by labor, and necessarily to mingle amongst the poor. You may see traces of her former condition, yet they will be but little more than traces. Compelled to bring her mind to her circumstances, to associate with, and perhaps receive instruction from, persons whom she once would have avoided, she must either be solitary in her manners, or despised as seeking pre-eminence, or she must come down to the standard of those around her, and the last of these will be in most cases preferred, although it will involve a great diminution of self-respect.

When independent in fortune, that person felt independent in mind, and abhorred anything mean—but when reduced to dependence upon another for bread, or even labor, and seeing that the most obsequious obtain the most smiles, then the cravings of want will humble the high spirit, and self-interest will induce that person to submit to the meanness of obsequiousness, although subjecting herself, at the same time, to the most painful feelings and self-reproach. It is evidently very difficult, almost impossible, for persons in general to avoid the influence of physical condition upon mind. Thus it is with those who have sunk from an elevated position, and it will be the same with those who have sunk from an humble position to one still lower. Perhaps the majority of charity seeking persons amongst us, may be of this class; they were never rich, but perhaps were quite above want; now they have sunk in circumstances from some cause, and the associates with whom they mingle are of a lower grade than in former days. This they do not know how to avoid, for these are now their neighbors. To keep on good terms with them, they mingle in their company, unite in their sentiments, and associate in their vices.

To some passer-by, it appears strange that in the block standing south of the Catholic Cathedral, and other places contiguous, there are so many gin-shops; and they ask where are the customers to support these shops? They cannot be in the neighboring houses, for there also customers are wanted—the bottles are exhibited in house after house, and I have known two such shops in one house;—whence came the customers? Now this is a question which the licensing power might have asked before they granted their license to sell, and there would have been nothing ultra in it, however ultra might have been the question, whether or not such sale should be licensed at all But in the multiplicity of cases, it is evident the good fathers of the city forgot to ask the question. Is it possible that a Catholic Cathedral, like a theatre, can be the attractor of a circle of gin-shops? No! no! to suppose that these shops are sustained by the worshippers at St. Patrick's, when going to, or returning from church, would be very unkind, and perhaps very unjust; for I have discovered that these houses contain, to a considerable extent, *their own customers*. It is unquestionably true, that when persons sink into poverty, they do not like to be scowled upon—they feel it even more than in better days—yet people will scowl upon them; their old friends and acquaintances will avoid them, lest they should want something. Landlords will be more particular than ever as to their rent, and when they have got it, not be respectful,

and scarcely civil. Some benevolent person calls to inquire as to a poor family needing aid—the landlord says nothing that will help them, and the room appears (in the estimation of some short sighted philanthropists) too good for a family receiving charity, and besides there are several articles of decent furniture—the visitor is dissatisfied, and leaves, but leaves no aid behind. The broken down spirit is prostrated—hope is blasted—in a little while the few decent articles are gone that food may be obtained, and the poor, dispirited castaway seeks a refuge where all, being poor, will sympathize with each other, and where the landlord, even if he charge higher rent, than they gave before, will speak soothingly, and though he advise them to drown their cares in whiskey, will be very faithful in giving them an excellent character to all enquirers. Lodgings for such persons, on such terms, may be found in the houses I have described. These houses, contain, I say, to a large extent, their own customers; for they are the pauper's rendezvous, and offer lodgings to beggars of every grade. They seem to be always open for new comers, and in some way or other they can accommodate them. There are various neighborhoods of this kind in this city, and I have called your attention to the one named, that I may give you an illustration of the remarks I have made. In one of these houses, in a garret, with sloping roof and low ceiling, one small, broken window, no bedstead, nor other bedding than a few bundles of rags upon the floor, I have found three families of men, women and children: there they lived, and there they all slept. Now, if a woman accustomed to humble life, or decent poverty, be constrained to remove to such a place, what must be the effect on her mind, her morals, and her habits? At first she will recoil from undressing in the presence of a strange man, but soon she will do it without a blush. Is she a wife? There are other wives and their husbands in the room, without even a curtain to hide the most private transactions. That which transpires cannot be unobserved, though seeking the darkest recess, and it will soon be imitated without secrecy and without scruple. Children, too, will see them, and think and imitate—and thus become depraved in their thoughts, desires, and practices. Can any one doubt that there must be a rapid declension in morals, in both parents and children? or that a bar is here opposed to moral or religious instruction? or that this state of things was consequent on the circumstances and condition of life? Besides this, persons living thus, are almost necessarily drunkards, whether men or women. Drunkenness, probably, reduced them to this state, but if it did not, the landlord would hardly allow them to remain in the house, or their fellow lodgers in the room, unless they became such. If ques-

tioned upon this subject, they are accustomed to reply that they do drink, but not too much; yet the question, what quantity is too much, is one upon which their opinion and mine would not agree. When the visitors from the City Tract Society, with whom I am accustomed to act, succeed in awakening in the minds of such persons a sense of their degradation, their first care is to cut them off from the society that misery loves. If, then, they can be induced to break off from their debased habits and associations, and to keep themselves, and the clothes they give them, clean—and especially, if they can be induced to work, then some hope is entertained that they will listen with attention to religious instruction; but not till then.

4th, 5th and 6th. As to the remedy proposed for these evils, I think there can be no doubt that if *the love* of cleanliness could be instilled into their minds by *moral means*, all the good you suggest would result from it, and real good would result if cleanliness were secured by *any means*; but I think it very problematical whether this could be obtained by coercion. Unless the will assents, there must be constant evasion, and but little will be accomplished. There is in the nature of man which will induce him to respect advice, if it be given with evident kindness, respect, and disinterestedness, but to reject real benefits if they be forced upon him against his will. The poorer classes often imagine that they possess rights which they do not, and no persons are more jealous of what they deem their rights than those persons are, or more ready to resent and oppose any infringement of them. I hold it to be a sound principle that no one has a right to do wrong; but many would dispute this, or if they admitted it, the question would arise, what is wrong? I regard it as wrong for any family, by neglect of cleanliness, to surround itself with a fetid atmosphere; but there are multitudes of the poor, or rather that class of the poor particularly interested, who imagine they have a right to do as they please in this matter, and that it would be a wrong that should be resisted, if any one interfered with this right. It seems therefore necessary, as a preliminary measure, to correct the judgment, for it is not that which a man ought to believe, but that which he does believe, that regulates his conduct. If this be not done, will he not regard what you propose, as a high-handed measure of the rich for the oppression of the poor? And if the poor man's shanty be visited more frequently than the rich man's mansion, will he not regard the law as partial and unjust, and probably as unconstitutional? And if this estimation of the law prevail, can it be carried into effect? It requires something more than legislation to convince the judgment, and no legislation, though based

upon the soundest principles, will be generally respected, if it be opposed to popular error. I can imagine that there are many who would be glad to receive the visits of a health officer, *if he* were gentle, kind, and unofficious—if he had the confidence of the family, and if he caused all cleaning and improvement to be done without expense or inconvenience to the tenant—*but not else*. I have been accustomed to visit the poor during the last forty years, and experience convinces me that if a wealthy individual, when bestowing a gift, find fault with the dirtiness of a place, he must do it with gentleness, and with due regard to feelings, and with no assumption of superiority, or he will exclude from the mind all sense of gratitude for the gift bestowed. Or if the person communicating kindness be known as the almoner of others, everything like scolding, and bluster, and importance, will be still more offensive; and though regard for the yet ungiven dollar that he holds between his fingers, may preserve the peace until he leaves the room, then will there be a bursting forth of pent-up indignation; and though at his future visits he may be received with civility, it will be the civility of hypocrisy. How then can we expect that the official intrusion, without a peace-offering, of a public officer into the place which, however poor, the poor man calls his castle, will be received with favor? He may, indeed, be clothed with legal authority to enter the place, and there to look into holes and corners, enforce the scrubbing of the floor, the liming of the walls, and the cleansing of the furniture, and oblige the woman to wash herself and her children, comb their hair, and scour their clothes; and all this may be important to the welfare of the family, and the health of the neighborhood, but it will be more likely to cause a breach of the peace, than to be regarded as a kindness.

There is a power somewhat similar in England, given to the governors of the poor; but in that country, under monarchical government, rights are often proportioned to property; laws are made to benefit or coerce distinct classes, and strength is given to the government by clothing it with vast powers to be used whenever discreet—that is, in cases of urgency. So with the law; the spirit of Englishmen would not submit to the every day enforcement of the power it gives, and therefore it is not to be found in every day life, but in the Statute book, ready for use in case of pestilence, or other apparent necessity. *Then* such a law would be really valuable. They have it in reserve for such a season, and it might be well if we had a similar law to be used under similar circumstances; for then, the judgment of every one showing its importance and necessity, it

would be enforced without difficulty. Of this we have an illustration in the operation of quarantine laws. The great plague of London, caused by the arrival in port of an infected cargo of hides, and various other cases, have impressed on the minds of men the horror of a plague, and the great danger of its being so introduced into a city or nation. Hence, every one sees and feels the necessity of a ship being inspected; yet that inspection is not hailed with pleasure, but submitted to as a necessary evil. Such, at least, I have found to be the case; and I was one of about 160 persons who terminated a tedious and almost suffocating voyage at this port, while the cholera was raging both here and in Europe. The same acquiescence in domestic inspection could be secured, I presume, only in the same way—that is, by the judgment being convinced that the measure is just and necessary. But how is the judgment of men to be so convinced, and especially in a season of general health? Not by the enactment of a new law giving new powers, but by moral means. If we had an awful pestilence, and all the physicians united in declaring its cause to have been the filthiness of the dwellings of the poor, it would no doubt produce an impression—though perhaps even then conviction would not be produced unless dicta were sustained by demonstration.

Yours, very truly,

ISAAC ORCHARD,

Sec. of C. T. Society, and Missionary of 15th Ward.

There is one other aspect in which the relations of the State or community, to its citizens are to be viewed, which cannot be omitted here without doing both parties injustice, especially as in this connexion the relation is very intimate, as well as important. I refer to the dependence of the community upon the labors of its members, for its prosperity, support and advancement. The influence exerted by a single individual upon the character and capacity of a government, is well marked and freely acknowledged, when men of commanding intellect step out from the common ranks. No one for example, can measure the degree of influence exerted upon the character of this country, or of mankind, by Washington, Franklin, or Fulton, or upon the prosperity of this State, by the genius of Dewitt Clinton. And so on downwards through the various gradations, and the ever varying abilities, physical and mental, of the masses of individuals, to the most insignificant, it is impossible not to see that each one possesses more or less influence upon the condition of the community, and by his peculiar labors, adds to it, or saves for it.

How many conflagrations have been prevented by the devotion to his calling of the sooty and despised chimney sweep, while thousands of dollars have been rescued from filth and nothingness, by the industry of the degraded chiffonier.*

Now, a great part of the wealth of the community consists in its physical labor. "Labor is wealth." The manufacturer, the artizan, the builder, *all* depend upon the skill and strength of those employed to do their work. Who then will say that labor of the most insignificant kind should not be protected, improved and facilitated, that the laborer of the smallest capacity should not be strengthened to the utmost, by careful training and education? It very often happens that almost the minutest muscles of the human body (those of the hands and fingers) are those which perform the most important and delicate work; so do we frequently find the most essential part of a magnificent structure, as of an engine, or a building, requires the labor of the poorest and roughest operative. Sound vigorous health is an essential pre-requisite to the proper performance of all labor.

The following passage from an author before quoted,† written for an analogous subject, is so directly applicable, so appropriate to my purpose, and so forcible, that no apology will be required for its length.

"This subject has merits which should command the attention of the statesman and political economist. All investments to preserve or increase the public health, would be reimbursed many fold, in an increased capacity for production. One of the most important items in a nation's wealth, consists in the healthfulness and vigor enjoyed by its people. All agriculturists and manufacturers must feel the force of this remark in regard to their own workmen; and they would feel it still more, if they were obliged, at their own expense, to support those workmen during all periods of sickness or incapacity to labor; and this is the relation in which the State stands to its citizens. It has been said by some writers on political economy, that from one-seventh to one-eighth of all the wealth of a country originates in the *labor of each year*. Hence, if any nation or community should cease from production for seven or eight years, the whole of its wealth—houses, lands, goods, money—would be consumed. What

* As an instance of the perseverance and frugality of this class of operatives, I was lately informed of one, who by his dirty trade, has amassed $400, which he was about investing in Western lands. Hundreds of these people derive a good support from this business in this city.

† Hon. Horace Mann.—Sixth Annual Report of the Board of Education of Massachusetts.

a forcible idea of the value of labor, is presented by this fact! Yet, what a sick workman or operative would be to a capitalist who was obliged to maintain him, a sick citizen is to the republic. Every sick man, every man rendered unserviceable by general debility, or specific ailment, must be subtracted from a nation's available resources. He not only adds nothing to the common stock, but he draws his subsistence in some form—and often, too, a very expensive subsistence, from the storehouse which the industry of others has filled. Omitting all considerations of personal and domestic suffering, of the extinction of intellectual power, and of those moral aberrations which originate in physical derangement and disease—and considering the race under the mere aspect of a money making power—in this respect, it is clear that the health and strength of one community, if set in opposition to the debility and infirmity of another, would be sufficient not only to determine the balance of trade, but to settle all other points of relative superiority. Let such information be diffused through the public, as all the children in our schools might easily acquire, and a single generation would not pass away, without the transfer of immense sums to the other side of the profit and loss account in the national leger. Of course, I do not mean that all diseases could be abolished at once, even by a universal diffusion of a knowledge of their causes; or that the era foretold by the prophet would be ushered in, when "the child shall die a hundred years old," and when there shall be no "old man that hath not filled his days." The violation of those beautiful and benign laws which the Creator has inwrought into our system, has been too heinous, and too long persevered in by the race, to be expiated or atoned for in a single age. Disease and debility, transmitted through a long line of ancestors, have acquired a momentum by the length of the descent, which cannot at once be overcome. But I do mean, if this subject were generally understood, that such a change would be wrought in a single generation, that a broad and deep current of wealth would be made to change its direction; and instead of millions annually flowing outward from the common treasury, to defray the various expenditures of sickness, that treasury would be replenished by an equal number of millions, coined from the mint and from the ore, of labor-loving health. Yet amid all our pecuniary speculations, this grand financial operation of substituting health and strength for sickness and debility—that is, immense gains for immense expenditures—has been unheard of.

"In the army and navy, where the expediency of giving battle has been discussed in a council of war; or afterwards, when the

causes of defeat have been explained by the vanquished, the state of the sick list has been made the subject of inquiry. The historian, too, in his account of campaigns, recognizes health and sickness as among the grand causes of success or disaster. But the manly health and vigor of a people engaged in the arts of peace—as among the most essential items in a nation's valuation, as a capital ready for profitable investment, in any industrial enterprise, and therefore as a prolific source of public revenue, as well as of private wealth, have been overlooked by statesmen and law-givers, in all their schemes for national aggrandizement.

"The pecuniary merits of this subject may be presented under another aspect. Children at different ages, and under different circumstances, may be regarded as representing investments of different sums of money. These investments consist in the amount which has been expended for their nursing, rearing, clothes, board, education, and so forth, and in the value of the time of others which has been appropriated to them. Though differing exceedingly in regard to different persons, yet in this country, the aggregate expense with its accruing interest, of the great majority at the age of twenty or twenty-one years, can hardly be estimated at less than from five hundred to a thousand dollars, after deducting the value of all the services performed. Now if half mankind die by the time they arrive at this age, or before it, and half these come to their untimely end through the ignorance of their parents or themselves, (and I may add through the inattention of government to their condition,) what an amazing price does our ignorance (and inattention) cost us? With what reckless prodigality do we continue to cherish it! What spendthrifts we are, not only of the purest source of affection and domestic happiness, but of wealth!"

Such being the condition of a great part of the population of this city, such the physical, and such the moral evils, which flow in a continually deepening and widening stream of misery, pollution and death, it remains for me now to point out, in conclusion of the plan with which I commenced this paper, the means by which the sources of the current may be dried up.

To secure the community against invasion by disease from abroad, we have a well organised and efficient "Cordon Sanitaire." This consists of the health officer, residing at the Quarantine station, and the resident physician and health commissioner, residing in the city. These, together with a board known as health commissioners, and in

conjunction with the board of health, (composed of the mayor, aldermen, and assistant aldermen,) constitute the *external* health police. No vessel can reach the city without an inspection by the health officer, who has full power to determine whether she has on board any material, or comes from a port in such a state of health, as might produce disease in the city after arriving at our wharves. Should he discover good cause to suspect her to be in a condition dangerous to the public health, he is empowered to detain her at the quarantine, a length of time sufficient to overcome all danger therefrom. The law is imperative, unless the board of health, for good and sufficient reasons, choose to permit the vessel to approach the city. The health officer has full control over the persons of the officers, crews and passengers of vessels suspected of infection, and over the cargo, and all the properties of the vessel and passengers. Certain articles may be destroyed by him, and he may order bedding and clothing to be purified and washed, before being brought up to the city.

These officers are all appointed by the Governor of the State. The city authorities have no voice in their selection, though the resident physician is to a certain extent, subject to the direction of the board of health. The only medical duty prescribed for him by the law, is to "visit all sick persons reported to the mayor, or to the board, or commissioners of health, and perform such other duties as the board of health shall enjoin." "The health commissioners, under the direction of the board of health, shall assist the resident physician in the discharge of his official duties."

These officers, it will thus be seen, belong exclusively to the external, and not the internal health police of the city, except so far, or at such times, as the board of health may direct. With the investigation and removal of causes of disease, and the suppression of epidemics generated, and existing within the city, they have nothing to do, unless ordered specifically by the board of health. Under present circumstances, the board having no municipal officer upon whose knowledge and judgment in such matters they could depend, the state officers would undoubtedly have plenty to do, should an occasion for extra services unfortunately arise.

This I repeat is our *external* health police; and it will be generally conceded to be well arranged, ample and efficient. All the incumbents are medical men, and care has generally been taken to appoint those in good standing in the profession, and possessing

sufficient age and experience. This is the more commendable, as nearly all the duties of some of the officers are merely financial, yet the incumbents may be, in the event of an epidemic, called upon to exercise their professional judgment and skill.

It cannot be denied that from within the confines of the city, more serious danger is to be apprehended than from without. In the pent up courts, the crowded tenements, the narrow streets and alleys, the damp dark cellars, in the destitution, filth and misery of a large part of our population, are the germs of disease, which will readily account for a large proportion of the weekly average of nearly 200 deaths, announced in the bills of mortality.

In geographical position, in climatic placement, and in geological structure, no site perhaps could be selected for all the purposes of a great city, of a more salubrious character than Manhattan Island. And yet whence this great mortality? It is not from without—disease is forbidden to approach our wharves. It can only be then, from within, the poor people meet with such abundant destruction. Many of the immediate causes of this I have endeavored to point out. The remedy and preventive, are next to be considered, and I will now invite attention to our *Internal Health Police.* This consists of an officer entitled city inspector, and assistant city inspector, an assistant to the board of health, and eighteen health wardens. For fifteen or twenty years past, it has been deemed important that the city inspector, (who stands in the relation of a head to this corps of officials,) should possess medical attainments and qualifications, inasmuch as many of his duties prescribed by ordinance, and many others not prescribed, are of a character requiring that kind of knowledge for their performance. In the last appointment, however, to this office, this principle was repudiated for reasons not very clearly set forth; it might have been considered as an oversight, had not an opportunity been given for a revision of the act, by the presentation of a memorial on the subject, by a very large number of medical practitioners, which set forth in a clear light, the true nature of the office, and the necessity of a medical education in its incumbent, and which memorial was not only responded to favorably, but its principles denied in the report of a committee appointed to consider the subject. The propriety of the appointment was insisted upon, and the sentiment was expressed, that not only is a medical, or even a literary education in the officer, unnecessary, but that without it, in the language of the report, "he is likely to prove equally, if not more, capable and efficient." I have no wish to criticise this remarkable

exposition of a principle which must strike every one who observes it, as entirely out of character with the present advanced state of intelligence. I will, however, endeavor in the proper place, to show that a medical education is essential to the proper discharge of the duties of an officer of health, of whatever grade, and of this one especially, and that the greatest care should be exercised in selecting those best qualified for this duty. The assistant city inspector, and assistant of the board of health, need not possess medical qualifications, as their duties are more strictly clerical; yet such an education would often be useful, as they sometimes are obliged to act in the absence of the chief officer.

Nor has it ever been deemed necessary that the Health Wardens should be medically qualified. Indeed, had it been, medical men could not readily have been obtained for the duty, as conjoined therewith, is an office whose duties are of a totally different character, and entirely irrelevant to the habits and educational capabilities of a physician. I allude to the office of Dock Master, and lately, the office of Street Inspector has been added to it in some of the wards.

Being one of the poorest offices in the gift of the Common Council, the post of Health Warden has rarely been sought for, or filled, by any other than the most ignorant and incompetent among the office-seekers. Its salary being the smallest of all, the most shameful collusions have been, and are daily, practiced, for the purpose of increasing the emoluments, whereby a large amount of money is irregularly and improperly taken from the pockets of citizens.* Another serious objection to the present arrangement is, that during the prevalence of epidemic or contagious diseases, in large numbers of single cases, the timid apprehensions of non-professional men, often wholly unfit them for duties of Officers of Health. They fear to approach a sick person, or even to enter a house where the disorder is said to exist, and they are more likely to increase, than allay, popular excitement. Some other equally injudicious matters, in this connection, might be stated, but these facts alone must be sufficient to convince any one of the utter inefficiency of the present system as a Health

*By the City Inspector, in 1842, a fraud was detected, which, had it proved successful, would have swindled householders of a large amount of money. It consisted of the printing of two hundred forged notices to empty sinks, which some nigh scavenger had ordered, and which would have yielded him from ten to thirty dollars each. This was but one operation, and there is reason to believe that such acts are frequently committed, with the connivance of the Health Wardens.

Police. *Not one of all the officers in that important branch of the City Government, is now occupied by a medically educated man.*

Allusion has been already made to a plan of Health Police suggested nearly two years ago. There are three prominent principles upon which an organization for this purpose should be based.

In the *first place*, the incumbents should be men whose education, habits of investigation, and powers of judgment, would enable them to determine what constitutes a nuisance, and how far any particular matter is calculated to derange the healthy state of the atmosphere,—in short, they should possess a good knowledge of the doctrine of miasmata of all kinds, and their influence upon health.

2d. They should be men whose daily occupations, and, if possible, their *personal interests*, would aid them in the discovery and suppression or removal, of the causes of disease: whose general intelligence, and regard for the welfare of the city, and especially of its poorer inhabitants, would induce and urge them to give a regular and thorough examination of all suspected and doubtful places.

3d. They should possess the qualifications for reporting, when requested, to the superior authorities, the sanitary condition of the various sections of the city;—for recommending such measures as prudence and enlightened judgment may dictate, and the practical skill requisite for the application of preventive measures, such as vaccination and the like.

All these principles and aims would be answered by the adoption of the following plan of organization. I propose *first*, to abolish the office of *Health Warden*, (of whom there are usually eighteen;) to divide the city into twelve districts, to each of which to appoint a respectable physician, to be entitled *Health Inspector*. These twelve, with the City Inspector and his office assistants, to constitute the "Health Police of the City of New York," the City Inspector, (also a respectable physician,) to be its head.

I need not enlarge here upon the benefits derivable from a reduction of the number of officers.

To obtain the advantages of the 2d principle, that is, to engage the *personal and private interest* of the proposed Health Inspector, (wherein he would have the best surety for the faithful performance of his duties,) I propose to make the boundaries of the health dis-

tricts identical with those of the present dispensary districts, and to unite the offices of Health Inspector and Dispensary Physician, in the same individual.

The duties of the Dispensary Physician carry him in the very track of the nuisances which should be corrected, and while administering to the relief of his patients, he would, as Health Inspector, cast about for the source of the evil, and apply the remedy. By the performance of his duty in one capacity, his labors in the other would be materially lessened.

How great a proportion of the rheumatisms, the fevers, the inflammations, the pulmonary and other disorders, of all kinds are attributable to the damp cellars, the filthy tenements, the foul yards, courts and alleys in which the poor are crowded, can be known only to the dispensary physician, who spends much of his time amid these wretched scenes, where he is now powerless for any preventive action that may occur to him.

But all are aware, for bitter experience has shown, that it is in those places the cholera, yellow fever, small pox, scarlet fever, measles, typhus fever, and all other contagious and infectious disorders, are particularly abundant and malignant.

It has been customary upon the breaking out of an epidemic, for the public authorities to use great exertions and spend much money in cleansing and purifying these pestilential spots, in order to arrest the extension of the disease. Their previous neglect, or a false economy, has repeatedly sown a wide-spread desolation, which such preventive measures as are now suggested, would to much extent have saved.

In addition to the duties now performed by the health wardens, the health inspectors should be required.

1st. To see that all persons are vaccinated, and for this purpose, to visit all houses, especially among the destitute, once a year; to be constantly prepared, and to offer their services, to perform the operation gratuitously, and to urge it upon all who may require it.

2d. To be subject to the requisition of the mayor or any alderman, or assistant, to perform any professional duty they may justly require; the health inspector, in whose district may be a watch house

or police office, to perform all the medical and surgical duties that may be required at those places, at the call of any officer attached thereto; and to do all other things that may be required by the city inspector.

The performance of the duties of this last section by a municipal officer, it will be at once seen, will relieve the common council of all the annoyance attendant upon the examination, and passage or rejection, of the numerous small bills now frequently laid before them.

It is evident that under such an arrangement as this, the duties of the dispensary physician would be performed with a greater degree of cheerfulness and care. The stimulus of a better remuneration, without the addition of any other duty than such as would tend to reduce the amount of his professional labors, and of a character not merely not incongruous with, but really in aid of those labors, the duties of both offices requiring generally but a little more time than is now given to one, there could be obtained for the joint office, men, of such character and age, as would not only prove a blessing to the poor, but a great assistance to the higher authorities, and give a profound satisfaction, and feeling of every possible security, to the whole community.

Not the least among the advantages derivable from the proposed combination, is this, that this corps of professional men, (selected as they are, and doubtless ever will be, by the trustees of the dispensaries, as those best qualified, without the slightest reference to political opinion,) being *ex officio* health inspectors, though commissioned as such by another power (the board of health), if found competent, the department would be at once raised above the corrupting atmosphere of partizanship, and we should then no more hear of public duties neglected for fear of making a political enemy, or through favor to a political friend; a practice too prevalent in this department under its present organization.

In the protection of public health, as well as in private practice, party zeal should be entirely repudiated; it is incompatible with sound judgment and efficient action.

If any one department, either of government or of private occupation (and the remark has as much weight in one case as in the other), should, more than another, be above the influence of political favoritism, and be sustained upon its intrinsic merits, it is that which

has the care of the lives and health of the community, or of individuals.

From what has been related respecting the effects of the habitations of the poor, upon their health, lives and morals, the evils are attributable to three things, viz: 1st, The living in damp, dark, underground, and other ill-ventilated apartments. 2d. The dirty and injured condition of the floors, walls, yards, and other parts of the premises. 3d. The crowding too many persons in single rooms of inadequate size and accommodations. To correct the first two of these evils, there appears but one way, and that is to place all the dwellings of the city under the inspection of competent officers, who shall have power *to enforce a law of domiciliary cleanliness.* For this purpose, those places known or suspected to be kept usually in improper condition, should be visited periodically, say once in one, two or three months. The law should be so arranged as to make the cleansing bear upon the owner or lessee, and not upon the tenant directly, who is generally so poor as to be unable to perform the necessary purgation and rectification of the premises.

The provisions of such a law would be similar to these.

1st. Every dwelling, or house, or room, court, alley, or yard, or other place used as a dwelling in the city of New-York, shall be subject at any time, between sunrise and sunset, to the inspection of the health inspector in whose district it may be situated. If in opinion of said officer, it shall be deemed unfit for the purposes of a residence, by reason of dampness, darkness, dirt, filthiness, too low ceiling, ill-ventilation, being under ground, or any other good cause, he shall immediately report the same to the city inspector, who shall, upon being satisfied that such report is true, serve a notice to that effect upon the owner, agent, or lessee, stating the reason therefor, and directing the same to be put in proper order and condition, within a specified time; said room, house or premises, to be outlawed, and forbidden to be occupied as a dwelling, until said order is complied with to the satisfaction of the health inspector.

2d. Should any room, cellar, dwelling, or premises, be found by the health inspector to be in a condition dangerous to the public health, by reason of emanation from the soil, or other places, or from any other cause, said officer shall report the same to the city inspector, who shall upon being satisfied of its correctness, notify the owner, agent, or lessee thereof, directing him to cleanse and purify said

place or premises, within a reasonable time; in default of a compliance with such order, it shall be the duty of the health inspector to cause such place to be purified and cleansed forthwith, and all the costs to be assessed upon the property so cleansed, and in addition thereto, a fine of fifty dollars.

3d. Should any owner, lessee, or other person feel aggrieved by the action of the health inspector or city inspector, appeal may be made to the mayor, or board of health, (sufficient time being allowed for the purpose,) who may reverse or confirm the decision of the city inspector.

The power possessed by the city inspector, or his assistants, is already sufficient for the general purposes of this proposition, such as entering and inspecting any premises, yard or dwelling, &c. But the essential points require some addition to the law, and I believe they are all embraced in the above proposed provision.

Can there be a doubt that such sanitary provisions, if well and discreetly carried out, would have the happiest effect upon the condition of large numbers of the poor of this city, and that they would prevent much of the devastation of health and life now made among them, by the manner in which they are compelled to pass their days by the negligent and unfeeling landlord?

The effect of such a law upon the habits of the tenant would not be *direct*—his personal condition can only be reached by the moral law—but the landlord, under this compulsory process, urged by the fear of having his premises outlawed would, in letting them, stipulate with his tenants to keep them clean, to whitewash the walls and ceilings, wash the floors, remove the collections of dirt and garbage, and keep the yard and cellars in good order. And knowing that the health officer will pay them frequent visits, armed with the power of the law, it is altogether reasonable to suppose that the tenants themselves would be stimulated to maintain a better appearance of persons and domicils—that many would feel a pride in a good and cleanly aspect—that the smothered feelings of self-respect, love of praise, and desire for the comforts of cleanliness, would, in hundreds of bosoms, be reawakend into life and energy.

Much of the good effect which might flow from the application of such a law, would depend upon the character and manner of the individuals appointed to enforce it. The exhibition of a regard for

their health and comforts, a manner combining firmness, kindness, and patience, a disposition to instruct in the *manner*, as well as to require the *act*, giving an assurance while making the visit of inspection, that it is wholly for their advantage, would satisfy the tenants that their health, comfort and protection, against the neglect of the landlord, were the chief objects of the law, and cause the visits of the inspector to be received with interest and pleasure. No person is more likely to be received with kindness, and welcomed as a friend, than he who comes to relieve suffering, or restore health. The plan I have suggested of uniting the offices of dispensary physician and health inspector in one individual, will effectually accomplish the object in view, in every particular.

The enforcement of a law to compel domiciliary cleanliness, may at first sight, appear to some as impracticable, to others as unconstitutional, (on the ground that a man's house is his castle, and his occupation of it cannot be interfered with without his consent,) and some may suppose it oppressive, as interfering with the rights of citizens to live as many in a room, in such manner as, and in whatever room they choose. An examination of this subject will expose the erroneousness of such views, and show that an inspection of dwellings will be as justifiable as the inspection of articles of food or clothing, or of steamboat boilers.

We permit, without objecting, the examination of our houses by the fire wardens, to see that all is safe against fire. No one objects to the law limiting the number of passengers in a vessel crossing the ocean, and the confiscation of the vessel for its violation; and the public voice would demand, in loud tones, the razing of a house in danger of falling upon the passers by. Chimneys are required by law to be swept every month, and if they take fire, a fine is imposed though no damage results. Cispools and sinks are now required to be emptied when the contents attain to a certain depth, under a heavy penalty. Unsound beef, hides, skins, fish, or any putrid, or unsound or unwholesome substance, may be forthwith cast into the river by the officer. The fire law prevents the erection of wooden buildings within certain limits, and prescribes the mode in which brick buildings shall be built. All these instances, and many others that might be mentioned, may be said to infringe on the rights of citizens, with as much propriety as the amendments here suggested. Nay, further, with regard to nuisances, the statute expressly declares the right of the Common Council to *fill up* any lots, yards, or cellars which may endanger by their condition, the public

health, and the same reason why a vessel without a clean bill of health, may not lie at our wharves, will apply to the dwellings in the city. Every house should be required to have a clean bill of health, or, like the ships, be placed under the control of the proper officers.

To raise from the depressed and poor, the heavy necessity of living crowded in single rooms, the source as I have endeavored to show of great moral, as well as physical evils, much aid cannot, I fear, be found in any legal enactment. If a family are so numerous as to require separate rooms, and so poor as to be unable to procure them, no law on the subject could be enforced, which would effectually prevent the evil. The remedy lies with the humane and philanthropic capitalists, by whom houses might be erected with all the comforts and conveniences of separate chambers, &c., which would yield a fair interest on their value, and make thousands of people happy. Here is a direction in which a fortune might be applied, which would produce an amount of happiness to the possessor, of good to the recipient, and benefit to the community, equal, I have no doubt, to all that could be possibly obtained by a new line of Atlantic steamers, though ever so successful.

This subject has two points of consideration of especial value with regard to the *temperance reformation*. An improvement in the condition of the home of the laborer, will remove one of the temptations to his frequent visits to the more comfortable and inviting grog shops, while the substitution of a more invigorating and stimulating atmosphere, will relieve in a considerable degree, the desire for artificial stimulus.

Atmospheric air is to the animal system, a powerful stimulant as well as nutrient substance. In sufficient purity and copiousness, it imparts a sustaining and vivifying power unequalled by any other substance. Its vitalizing operations present one instance of the wonderful adaptations of natural things to each other, but it is singularly striking, because of the immediate and incessant dependence of animals upon it, for life and strength. Air, when pure, gives a freshness and vigor, a tone to the nervous and muscular parts of the system, productive of the *highest degree* of mental and physical enjoyment. Without the tone thus imparted, the functions of the system become relaxed, and in addition, the animal spirits and feelings become depressed and uneasy. To relieve this condition, nature instinctively seeks some stimulating means. Many feed on mental ex-

citement—the stimulus of business with some, with others of society, with some of hope and expectation, keep alive the energies. But the farmer feeds his nervous and general strength on fresh air and wholesome labor. Artificial stimulus is not required by him, he does not feel its want, and has comparatively little relish for it. But the dwellers in the cellars, courts, and ill-ventilated garrets, depressed and prostrated by the want of the stimulus given by nature, unable to enjoy the feelings guarantied by an unfailing abundance of oxygen, *instinctively* feel the want of a substitute; *they find it in alcohol.* The allurements held out by those dens of destruction, abounding on all sides, add temptation to instinct, and the child of ignorance and misfortune terminates his senses, and often his life, the victim of licentiousness and unnatural debauchery.

First take the drunkard from the cellar, give him the stimulus of a pure atmosphere, relieve the demands of nature in this particular, and the work of reformation is half done, and will then go on with increased vigor; but as long as he is deprived of the sustaining power offered by nature, his artificial appetite will be less easily appeased.

The community is guilty of the double offence of cutting off from the destitute part of its members a proper supply of air, in other words, of exciting an appetite for a vile and destructive substitute, and then of presenting to them at almost every corner, opportunities for indulgence in the poison.

Very few members of the medical profession ever find a seat in the public council chamber. Legislative and executive bodies must, therefore, be dependent, in their ignorance of the subject, upon the knowledge and experience of the lay members of the profession, to enable them to make the proper laws, and exercise the proper authority for the protection of their constituents against the encroachments of disease. Is it not then, clearly the duty of the appointing powers, to fill the offices having the control and direction of sanitary matters, with men of the largest experience and most cultivated capacity in medical science, having regard to the important consideration that a man may be a good prescribing physician, without the kind of knowledge or the taste requisite for the due discharge of public duties of this character. This is a peculiar branch of the science, (though strictly medical,) and as distinct as the practice of surgery.

The judgment which should be exercised in seeking medical advisers for ourselves or our families, is equally, if not more imperative, when the protection of the 200,000 members of the community is concerned.

The necessity for a medical education in an Officer of Health, may be shown by instancing some of the practical duties which must be performed by him, whether a chief or subordinate. The question "what constitutes a nuisance?" is one which now divides the scientific world. On either side are ranged the most acute and philosophic minds. Experiment upon experiment has been tried, the light of science and research has been profusely expended, in the endeavor finally and satisfactorily to settle this question, so important to the health and happiness of man. On the one hand, the public health is to be protected at whatever cost, and on the other, private property must not unnecessarily be destroyed. Can it be supposed that a decision of this frequently intricate question by an officer who has little or no knowledge of chemistry, nor physiology, nor the laws of miasma, nor any other science bearing on it, will be satisfactory to the public, or to the holder of the property destroyed by his order? And is it reasonable to suppose that in such hands the public weal can be secured against the influence of disease—generating nuisances? Such an officer should always be able to assign the most conclusive and satisfactory reasons for his acts. The severest acumen, and most rigid search, are frequently, for a time, at fault in detecting the source of a wide-spreading pestilence—this city has repeatedly been visited by endemic diseases, and has greatly suffered in reputation and interest in consequence of a want of energetic and capable officers early to detect and remove the latent cause of the disorder; and where learning and experience have sometimes been baffled in the discovery, or right estimate, of the sources of general sickness, it is folly to suppose that ignorance and inexperience, though associated with moral worth, can infuse confidence in the community, or give to it safety or credit.

The nature of the products of decomposition must, therefore, be thoroughly understood, before a correct conclusion can be arrived at, for upon them it depends, whether the decaying matters are capable of generating disease in the human frame. And here we find the nicest distinctions necessary. For example, putrefying vegetable matter, in general, is believed to be a prolific source of disease, but there is a wide difference between different vegetables; some are almost innocuous, while others are exceedingly baneful. Some, while

decaying, give forth gases of the most offensive and deleterious character, and from others in like state, little will be observed. The difference between "decay" and "putrefaction," the two destroying processes which animal and vegetable matters undergo, and which are wide asunder in their nature and effects, should be well understood and never forgotten.

The following communication from my friend and colleague, Dr. R. K. Hoffman, exhibits in a striking light the vigilance and discrimination necessary on the part of those who have the care of the health of large numbers of persons.

From R. K. Hoffman, M. D., late Surgeon U. S. Navy.

22 WARREN-STREET, *August 30th*, 1844.

My dear sir—Your note of the 26th inst., reminds me of our conversation at the Hospital, in which I mentioned the occurrence of fever on ship board, from the decomposition of vegetable matter.

On referring to my journal for the particulars you ask for, I find other causes combined, which alone may be considered sufficient to have originated and propagated the fever; but I will state the circumstances from which you will make your own deductions.

In the summer of 1817, the U. S. sloop of war Ontario, commanded by Capt. James Biddle, was fitted out in this port for a voyage to the Pacific Ocean. On the 24th of June, she left the Navy Yard and anchored in the North River, off the Battery. The crew consisting of 175, continued for a time as healthy as *usual for a new crew in port.*

Being destined to convey Mr. Rodney and Judge Prevost, as Commissioners to Buenos Ayres and Chili, a large supply of cabin stores, including the ordinary vegetables, was received on board, and stowed in rooms constructed for the purpose, on the berth deck, between the hatchways, obstructing ventilation, and encroaching on the space allotted to the men to sleep, while that under the top gallant forecastle was redolent of its new occupants—poultry and pigs. The season was rainy, sultry, and damp; and the state of the weather compelled the crew to sleep below, where the exhalations from decaying vegetables, especially in a calm night, rendered the air almost insufferably hot, and peculiarly offensive.

Such was the condition of the ship, when at the latter part of July, during the calm, sultry, rainy weather, a sudden increase of disease took place; it commenced with a sense of great debility, particularly of the limbs, aversion to all exertion, pains in the head, loins, and bones, anxiety and nausea—the skin generally moist and hot, tongue loaded with a yellow coat, bowels rather loose. In some it assumed a typhoid character in its progress, while its more ordinary type was that of bilious remittent. There was a daily succession of cases, and from the 20th of July to the 15th of August, the average number was thirty.

Capt. Biddle did not concur in opinion, with the surgeon, that local causes had the principal agency in producing the disease, but seeing no prospect of realizing the expectation of getting to sea, obtained from Colonel Haidman, the commanding officer, a spacious and airy building, on the south side of Governor's Island, to which at the date above mentioned, the sick were removed. On the 17th, there were three new cases; on the 18th, two; on the 19th, none; on the 20th, two; on that evening the wind came from the north, the air was cool, and three more sickened, preceded by a chill. These cases were transferred in succession to the hospital on the Island. With the change in the weather, which continued comfortably cool, with fresh breezes, the fever gradually disappeared, no new cases occuring after the 24th.

I would add, that in the course of the voyage, when all on board were healthy, the first Lieutenant, who occupied the forward state room, sickened with symptoms of fever. On searching for the cause, some rotten potatoes were found in a locker adjoining his room, from which he was separated only by a board partition.

The state of health in the city was good during that season. None of the men died.

I am, sir, yours truly,
RICHARD K. HOFFMAN.

The subject of *sewerage* is destined to be one, which of necessity must ere long occupy the attention of the people and the government, and upon which an intelligent and judicious officer of health may throw much light. It will, I am satisfied, be found not only the most economical, but the *only* mode, in which the immense mass of filth daily generated in this large city, can be effectually removed. In some foreign cities, under-ground sewerage, on a regular uniform

plan throughout, the sewers constructed on the most scientific and substantial plans, has been carried out in the completest manner, with the most decidedly beneficial results upon the general health and comfort. We are annually giving proofs of our belief in their necessity, by the construction of single sewers in various places, as they are demanded by circumstances, but it is done without reference to any uniform plan, and it is feared, that thus, much confusion, and great additional expense, will fall upon the treasury, whenever it shall be deemed proper to project and carry out, over the whole city, a complete and uniform system; and I believe, "to this complexion must we come at last." One thing, especially, brings this conviction: since the introduction of the Croton, the rain water cisterns being useless, the bottoms of them have in many instances been taken out, and they have been converted into cispools, into which the refuse matter of the house is thrown. Great trouble is thus saved to families, and domestics, but it needs no prophetic vision to perceive, that an immense mass of offensive material will thus be soon collected, its decomposition polluting the air, in the immediate precincts of our chambers and sitting-rooms, and generating an amount of miasmatic effluvia, incalculably great and injurious. Discharge all the contents of our sinks and cispools, through sewers into the rivers, and we will avoid two of the most powerful causes of sickness and early death.

The great quantity of water from the sky, the hydrants, the unused wells, &c., now accumulating beneath the surface, must find its way into many basements and cellars, rendering them very damp and unhealthy, and for which sewers constitute the only remedy.

Another mooted sanitary question, is the influence of *grave-yards*, *vaults*, and other burial places, in large cities, upon the health of the inhabitants. Some acute men are now endeavoring to maintain that no specific bad results have ever been, or can be, justly attributed to them, while others, among whom is Chadwick, regard them as highly objectionable, and on this side appears the most direct and positive evidence. In this city are some places of interment, which whatever may be said of their effects on health, are certainly crowded and offensive to a high degree; their condition and influence, as certainly, demand an intelligent and careful investigation.

While writing this communication, there applied to me for medical advice, a young man, who had gone, in good health, into a vault of a church in a densely populated part of the city, to see the coffin

containing the remains of a relative; he had been in but a few moments, when the effluvia was so offensive and powerful, as almost entirely to overcome him. He immediately retired, returned home, and when I saw him, three hours after, he was laboring under a considerable degree of fever, and other disordered symptoms, which he said had all come on since his visit to the vault. He thinks the vault must have contained not less than two hundred bodies. The place has before been complained of, and it is difficult to avoid the belief that more or less injury must be inflicted by it on the health of the neighborhood.

Not the least important of the results which should be obtained from the appointment of an officer to superintend the affairs of public health, is that of keeping a constant watch upon the progress of diseases, drawing the proper inferences obtainable from a careful inspection of the mortality returns, and giving them to the public in a suitable form and manner. Living as we are in constant subjection to attacks of bodily disease, induced by the circumstances of life, the lances of death held constantly "in rest," by a thousand unseen hands, waiting only the stirring of the breeze to thrust them at our unconscious frames, such an officer should be as a sentinel upon the tower, watching with an intelligent and never closing eye, the manœuvres of the wily enemy, and with a ready pen, alert to send the alarm to every quarter, and prepare the city for a defence against his approaches. The inhabitants may be, some, reckless of danger, and careless of life, others may affect to despise the warnings of the watchman, and scoff at the "philosophy of diseases," but it is no less the duty of the faithful magistrate and officer, to see that at all points the constituency are guarded, with whatever of science *and* virtue they can find.

There is in this city but one officer in the receipt of the certificates of death—the only source of knowledge of the diseases which prevail. He is the city inspector. It is by law made his duty to publish every Tuesday, a list of the deaths occurring during the preceding week, and in January, "to publish the whole number of deaths which shall have occurred in the city of New-York during the preceding year, with the sexes, ages and diseases of the persons so dying." This is the *letter* of the law, and any boy who has the *quantum sufficit* of reading, writing and arithmetic, with a fair proportion of patience, may make out the tables in the unscientifically alphabetical mode in which it has usually been done. But of what use is this? We learn by it that 9,000 or 10,000 deaths occur an-

nually ; we are informed of the diseases which cause the *deaths*, (if the arrangment is worthy of dependence, which it is not always,) but of the *causes of the diseases* we are told nothing. To derive the proper and full advantage from the returns of mortality, we must look beyond the mere name of the diseases, and ascertain the *sources of those diseases*. *Now!* the reports are useful for little more than to satisfy ordinary curiosity, or to enable the preacher " to point a moral ;" but if properly analyzed, and their whole bearing and influence exposed and elucidated, they would become valuable aids to the private physician, and to the public officer of health, in studying the liabilities of New-York, and the influences of its climate, position, temperature, and other circumstances in producing diseases.

If I may be allowed to illustrate this point, by referring to a result of my own study of some of the annual reports, I will recall attention to the discovery, that in this city there is less consumption among the native residents, than in Boston or Philadelphia. This is proved by a calculation, the correctness of which may be tried at any time, which has not yet been questioned, and which turns the tables completely, as they were before set down, by those who would make New-York a comparative Golgotha.

This officer should study the influences of seasons, localities, and many other circumstances, on the aspects of disease, and he should keep a record of the barometric, thermometric, hygrometric and pluvial changes. An improvement in the certificate of death, is also much needed ; a more clear designation of medical terms, inquiries into the condition and physical circumstances of the decedent, the length of his residence in this country, if a foreigner, and the influence of the change of climate upon the cause of death, and many other points, are necessary to obtain correct and specific conclusions respecting the diseases of New-York ; while a thorough knowledge of the wants of science, and of what has been done abroad, in countries where the subject has constituted the labor of the lives of the most gifted individuals, is highly desirable. All this knowledge can only be obtained, and the improvements properly urged and applied, by an individual of good medical education, and one who has a taste and willingness for the work. A capable health officer would be well employed, and it should be made his interest, to devote his time and talents to the dissemination of sound precepts concerning the preservation of health and life among the people to whom knowledge on these subjects is now almost inaccessible. To a vast number, for whom instruction as to the best method of regulating their

internal and external domiciliary, and their personal arrangements, is most desirable, it could be given in such forms as would certainly arrest attention and be productive of incalculable benefits. The circumstances of life, which have influence in producing disease, are endless in number, and yet the sufferers, in too many instances, are wholly ignorant of their power, or even of their existence. This is true to a great extent of the rich and educated, as every physician knows, but it is emphatically the case with the destitute and ignorant, to whom the laws of health and life, are a sealed book.

These labors I regard as answering to the *spirit* of the law, and, in nearly the words of an able writer on poverty and crime, "The wisest civil regulations that can be devised, will avail but little for the advancement of society, if the officers who execute them, look not beyond the letter of their commissions, and fail to communicate what they learn of the causes, the remedy, and the prevention of diseases."

To this subject, the language of an inspired penman may be literally applied:—"The letter killeth, but the spirit giveth life."

A sanitary police, composed of such individuals as are herein suggested, would constitute a sufficient corps of *Health Missionaries*. Their time would be principally devoted to the purpose of teaching the poor the rules which should regulate their household operations; and the value of fresh air, ventilation, cleanliness, temperance, &c., would form constant themes for them. The circulation of tracts on health, distributed with the same freedom as religious tracts now are, by hands equally interested in the comforts and condition of the poor, would form a powerful addition to their means of usefulness. The Dispensary Physician wields for these purposes, a power possessed by no other class of men.

To the habits of life of many of the laboring classes, to their confinement in small apartments, and to *their ignorance of the laws of life and health*, by which especially, even their contracted arrangements are unnecessarily kept in a bad condition, we are to look for no inconsiderable amount of the injury which they sustain. The moisture, filth, and confined atmosphere of the courts and alleys, are also prolific sources of disease; in the occupations of many lurks the enemy. But if we restrict our attention to them, we shall overlook a very large proportion of the causes of mortality, and with all our efforts to improve the sanitary condition of our city, we should fail in some of the most essential points. A well regulated

and efficient health police might do much towards correcting the existing evils, but to carry the desired reform to the utmost limit, and with a greater permanency, measures which no police can carry out, are necessary. And as these evils are not confined to the laboring and destitute part of our population, but afflict also the wealthier portion, a more healthy state of public opinion is absolutely necessary to effect the desired results.

This can best, if not only, be done, by making physiology, as applied to the laws of life, and the prevention of diseases, a subject of study in all our private, public and common schools. The children who attend these, especially the latter, are the individuals by and with whom, the important change of opinion and habit, is to be wrought, if at all. It is needless to say to an ignorant adult, apparently free from sickness, that he lives, works and sleeps, in too confined an atmosphere; he will answer that he is well enough, a change would be irksome and cost money, and he will not believe what you say, for he cannot be easily made to understand the importance, or even the right use of air. But bring up his child in a knowledge of the value and necessity of pure fresh air, by teaching him the relations which it bears to the blood, the digestion and other functions—teach him never to fear it, that it is his immediate and incessant source of life and health—give him a knowledge of the diseases and dangers to which its absence will subject him, and think you he would not avoid its impurities, as he would poison or the pestilence? In his school-room, his sitting-room, his chamber or his work-shop, he would seek for a pure clear atmosphere, as when thirsty he would seek the cool water, as the weary "heart panteth after the water brook." "Ventilate, ventilate," would be his natural demand, in tones of earnestness proportioned to the necessity which his expansive lungs, and ever freshened feelings, would readily discover. The humble tenement of the laborer, would then, though but a single room, be no longer shut night and day, unvisited by the refreshing air of heaven; the workshop would then no longer be a close receptacle of foul effluvia of human and other origin, and our churches, public rooms, and lecture halls, be no more unventilated. (*En passant*, what a strange inconsistency is it, in the refined and polished, to object to sip a mouthful of water from the same glass as another, in which there could be no possible contamination, and yet swallow over and over again, the breath of others shut up in the same apartment, and which has passed through hundreds of lungs, perhaps diseased, and over teeth in every stage of decay.)

So with their food and drink, their exercise, personal cleanliness, and all other things pertaining to health and longevity; when once instructed in the principles which should be observed with regard to them, how great would be the difference in the habits of life. If it is admitted that many of the improprieties of life are due to an ignorance of its laws, then a knowledge of those laws would cause a diminution of the improprieties.

And I submit, whether a more powerful aid of *temperance* can be found, than instilling into the youthful mind a knowledge of the structure and functions of his system, and the poisonous results of alchohol upon them.

The general introduction of this subject as a branch of school learning, would, I hesitate not to say, have a greater meliorating influence upon the human condition, than any other. Already has it been introduced into many private schools, and given delight to both teachers and pupils. The abundance of material, and the facilities for its illustration, put it on a par with chemistry and natural philosophy, in attractive interest, while for real usefulness to the concerns of life, it is far in advance of astronomy, and many other studies, now generally taught, and for which it might be advantageously substituted, should any change be necessary. The operations of a living machine must necessarily possess a degree of interest to the student observer beyond those of inanimate bodies, and when once the study of the *animal machine* is divested of its ancient and unnatural feelings of superstition, and of its exclusive and unnecessary confinement to the physician, (which I think are rapidly disappearing,) it will be found to yield a degree of entertainment, as well as usefulness, unsurpassed.

Now where are the advantages of this study most needed? among what classes of the community are its precepts and laws, its vital and saving influences, its checks and guards against disease and danger, most required? Is it among those who live in high-ceiled rooms, who have plenty of time and means to go abroad and seek fresh air in the country, who can afford to live on the choicest delicacies, and dress in the most comfortable manner, who have no fear of want, and are not compelled to study the most economical mode of living? or to seek out, from a very limited field, the best they can do for themselves? No! indeed, such need comparatively little aid. They may turn night into day, and dissipate their time and strength in de-

bauchery and folly, but they are not compelled to reside in cellars, and chambers ill ventilated, or to associate with filth, in foul air. *They* are only to be reached by *moral* teaching. But those whom penury subjects to the necessity of living in the cheapest rooms, who must submit to the hardest extortions, or live in the street, and whose gross ignorance prevents them improving their condition as much as they might, had they a knowledge of the true mode—these constitute a large class for whom humanity demands that we should employ every means in our power for bettering their physical, as well as their moral condition. Of what use is science, if it cannot be applied to the *practical* purposes of life, or employed to improve the character and condition of our fellow creatures. It can no longer be shut up in monkish cells, nor yet will I believe that its absence in an officer of health, will, by the community, be regarded as qualification for office.

These pages have become extended to a number entirely unexpected at the commencement, yet no allusion has been made to many matters of sanitary value, which cannot be omitted in the consideration of the general subject, without leaving it in a state of incompleteness. The present condition and wished for improvement of the destitute part of our population, have been my specific objects of attention. An extract from the latest (English) work upon the subject of ventilation, recently put into my hands, places this whole subject in its true light. "The dwellings of the extremely poor present scenes of misery, desolation, and woe, which it is afflicting to witness, where the sensibilities are not hardened against the sufferings of humanity. They must be seen to be understood, and to draw out that amount of individual sympathy, which they imperiously demand, in a civilized and christian community. The station of this country in arts, literature and science, is acknowledged throughout the globe, as well as its naval, military and commercial power; and latterly, its exertions against the slave trade, have given a noble example in the cause of humanity, and soften the recollections of former times. But the regeneration of its own population, or rather the placing of them in that condition which the progress of religion and philanthropy demands, is perhaps a task of more moral grandeur, and of still more difficult execution than any which it has attempted."

To this I will only add, in conclusion, (what has been before briefly referred to,) that respecting the laws of health and life, it may be

said, though the remark may seem so extraordinary as apparently to amount to a libel on human nature, on no other subject connected with the interests, happiness, or longevity of man, is the darkness of ignorance so profound and so universal.

AGRICULTURE.

An Address delivered before the American Institute.

BY HON. NATHAN BURCHARD, Vernon, Oneida Co. N. Y.

MR. PRESIDENT, AND GENTLEMEN OF THE INSTITUTE:—

The destination of man is evinced by his aspirations for domain and habitations more extensive and commodious than the wild range and dark caverns of the tenants prone to instincts. And as far as memory can trace the shadowy lines of evidence, momentous matters would have been lost in an endless night, but for the finger of inspiration which points out the cradle where innocence first budded; and where man erectly stood, surrounded by law and order, and was invested with a peaceful dominion over vgetable and animal forms. Occupation and cultivation were his proud empire and gracious boon in the garden of felicity. And when doomed to toil amidst noisome weeds, and lacerating thorns, weary and faint, his slumberings were awakened by the joyful tidings that opened in his ear this sweet and consolatory promise, that the moisture that should gather on his manly brow, would bring him food amply to sustain his short but eventful existence. Our earthly career is full of conflict; and excellence is not attainable without masculine vigor and indomitable perseverance. A nature, unassisted by art, is indeed a rugged nurse, giving out only coarse and undainty subsistence. Her uncultivated regions where civilized man never trod, and to which his peaceful implements have never been applied, afford a melancholy proof that her unreclaimed realms are "a wild where weeds and flowers promiscuous shoot."

Look at the country of our ancestors, before Cæsar's legions had penetrated into the sea-walled domain of barbarism and civil broils, the indigenous vegetable race grew berries of base quality, and no

choice and nutritious fruit which now thrives, ripens and glows in English gardens, with all the splendor of tropical productions,

Fortunate for the human species, that the first germ of civilization sprouted in Egypt, here without doubt was the cradle of the arts and agriculture. The swelling waters of the Nile teemed with fatness; and a genial climate and protective laws evoked into existance a *caste*, or hereditary class of men, who from their childhood were familiarized with the practice of cultivating the soil with dexterity and success. Though the early history of her inhabitants is lost in the shades of darkness, yet her venerable monuments of architectural taste and magnificence are co-assistant and truthful witnesses, that she was the mother of the arts, and a granary for *corn*, feeding for ages her own immense population and her famishing neighbors. How mysterious are the plans of that great *superintending mind*, who by his unerring wisdom brought his *chosen* pople in contact with these great civilizers of the human race! The nomades left the plains and mountain ranges and were content to live in fixed habitations, and learn all the arts and cunning devices of their hard task-masters.

This school was thorny and beset with heavy burthens, but it was the very school to teach those who were to *abide alone*, how to grapple with the difficulties and hardships which accompany an irregular and wandering life. It is evident, that long before Moses the founder of the Repub'ic of the Jews, had expounded his scheme of government, and enforced it by such terrible sanctions, this isolated people were not only acquainted with the various handicrafts essential to domestic comforts, but also were carefully trained to those occupations which minister to the demands of the more opulent classes of society. And when the leader of Israel stood on the glorious heights of Pisgah, the very topographical aspect of the country was well calculated to inspire his soul with impressions of the highest sublimity.

There rolled the limpid waves of Jordan, flowing through a basin whose calcareous rocks oozed honey, and filling the eye with green pastures over which countless herds wandered, and fed frugal man with their foaming milk. Here stood Libanus, whose splintered sides in deep and hideous rents are wrapped in snows that never melt under a fierce Syrian sun, and its aerial pathways lay among terraces belting round its base; broad acres covered with a rich soil, and gradually receding till lost in the fleecy clouds.

Mr. President, can there be found a spot on earth so favorable to develop and disseminate every species of product susceptible of human cultivation as Ancient Palestine? Within the circuit of sixty miles, the formation of the country is particlarly favorable to the richest and choicest productions. Here may be found the climate of every zone; the cold and chilly blasts of the North, and the hot and debilitating winds that blow over parched and sultry deserts, while in the centre the inhabitants are fanned by delicious and refreshing breezes. This singular country is a perfect *jardin des plantes*, a botanical garden, without your hot-beds—green-houses and sleepless protection. Here we tread upon a soil which has figured almost as much in the vegetable reign, as it has been transcendently conspicuous for splendid and thrilling events. The former lords of these mighty mountainous domains took delight in wrestling with the difficulties of nature; and let us never ungenerously judge that ancient, bold and free race, who constructed those subterranoeus aqueducts and canals on a noble scale, tapping reservoirs in the heart of granitic masses, and in their descent opening passages through the most appalling obstacles, turning impracticable barriers, and moistening, sandy and sterile lands in the lower level by means of a thousand secret sluices and ducts, by the present deluded and enslaved tenants of the soil, who have ingloriously suffered these beneficient works to go into dilapidation. It is but justice to say that the bounties of nature are beautified by a thousand rare productions; and though the fine sky no more inspires the Hebrew poets, there is still a spirit of liberty which pervades these lonely provinces, and the industry of man is not as elsewhere harassed by predatory encroachments. For agriculture, like commerce, will fly the earth, until it finds a resting place where it may breathe. Hence those plantations of cotton, those mulberry and olive yards that mantle the rugged cliffs or carpet the deep ravines. Here the traveller is petrified with astonishment to see vine stocks, rival his own oaks in size, and loves to retreat under leafy arches and broad ceilings of verdure, to lull his senses to voluptuous repose. And here wheat and pulse grow alternately in one annual revolution, and the numerous varieties of plants and flowers, bloom and ripen without effort on the topmost branches.

The propagation of plants from this nursery has been almost as scattered as her ill-fated people.

Hence some of the seeds of science and art which pass so imperceptibly from one people to another, found their way into the despotic dominions of the kings of Persia. Under the patriarchal sway

of its sovereign, the whole nation were gathered together, and with implicit obedience to authority and reverence for ancient usages, the warlike Persians struggled to emerge from darkness into the light of civilization. Hence arose laws, mechanical arts, but more particularly the ancient and honorable art of agriculture in all its details. For this life sustaining employment almost received divine honors from the worshipers of the sun.

They too, in an eminent degree, exemplify the stimulating agency in the developement of the resources of that wonderful country, by the encouragement which they gave to the other industrial classes. For their skill in the manufacture of different articles for the royal household, such as shawls, carpets, coverlets and hangings for stately palaces, and the delicacy of their texture, and the brilliancy of their dyes, excited the admiration of every foreign artisan.

Royalty here laid aside its empty pomp and came down from its adventitious heights and held her annual celebration, with the plain husbandman which taught the sceptre to yield homage to the plow, and haughty monarchs to deign converse with the cultivators of the soil, and repeat the truthful lesson, that the cradle and the grave, the entrance and exit of every man, are the true levellers of all human pride. And that kings are dependent on that hardy race that wring their subsistence from the earth.

The ancient Romans, more sagacious than the more refined and polished Greeks, were too politic to neglect this life-sustaining occupation. Her mighty legions that carried her victorious eagles to the most distant regions, leave the germs of civilization among the rude and unlettered multitudes, that yield to her overwhelming power. If she did sway the rebellious and haughty nations, she made some compensation by the majesty and wisdom of her laws, and the general diffusion of the peaceful pursuits of the arts of *Cadmus* and agriculture, among her remotest dominions.

The enchanting poetry of Virgil and the elegant pages of Columella, show that her distant provinces were planted by the hands of these masters of the world, with the rarest flowers and delicious fruits brought from the furthermost regions.

The plow, among the Romans, was held in high veneration. Her Cato and Cincinnatus were called from the fields to assume the consular robes, but the extinction of this noble pursuit took place with the fall of that republic.

When the mind takes an enlarged and calm review of the rude manners and warlike customs of our ancestors, it is irresistably drawn to the conclusion, that they were ignorant of this healthy and ennobling art; and their bloody and superstitious traditions are a sickening evidence of their frigid indifference to the other hand-maid occupations.

For glance at the history of by-gone ages, and you will find it replete with those terrible national scourges, war, pestilence and famine.

How could agriculture, amidst the fierce and continued storms of turbulence and barbarous conflicts, have other than a crippled and dwarfish growth? In the dark ages, when the baronial chief isolated himself in his lofty and impregnable castle, bidding defiance to the haughty foe, the enemy was marauding the defenceless vassals, the poor and degraded populace whose persons were exposed to the most humiliating insults, and heaven's image was marred by a system of debasing and fickle slavery. Here all was insecurity or the feverish sense of insecurity—no protection to the hungry mechanic or stinted husbandman. For rapacity ever stood ready to prowl on their precarious and meagre accumulations, while famine followed in the train, drying up every spring of industry.

The revival of letters dispelled by degrees the gloom and darkness which for centuries had shrouded Europe; and the clergy who then monopolised almost all the learning deposited in the penetralia of cloisters and monasteries, established those universities, and founded those colleges, which gave an immense stimulus to literary talent, and trained the youth in that knowledge which was calculated to build and adorn their order. The sowing the seeds of Roman and Grecian literature, in the soil of those nascent seats of knowledge, gradually caused a healthy growth of those elements of general and useful education to spring into life which have contributed so much to improve and exalt our species.

A sacred obedience to law framed in the spirit of equal protection and liberty to all, order reigning triumphant over the selfish passions of our nature, a laborious and comprehensive induction, and free discussion, are the rich triumphs of modern improvement.

We make no crusade against liberal education, nor do we feel like those, who think they snuff something in its influence, tainted and

aristocratic. However, it cannot be denied, but that dissipation may be found in these consecrated seats, but we maintain it is not the tendency of academical supervision, or the course of scholastic instruction. At the altar of literature and science, an ingenuous ardor is infused into the youthful breast, a taste imbibed to express the most subtle conceptions, and to please the most refined ear, reason exercised to attain the unclouded heights of demonstration, mental contact inspiring a generous emulation, and a hearty and frank intercourse polishing the rude mass, into a lovely form, surely strike at the very foundations of moral aberrations.

We deem a profligate and dissolute band of reckless blades, the direst calamity that can befal the temple of learning, yet we know that it is the lot of humanity for evil to defile the most sacred places, and that noxious weeds often grow within the odour of the fairest flowers.

The matriculation or college record bears decisive testimony that a great majority of the young men who frequent its halls, have emerged from parents of humble stations, and are sustained by their self-sacrifices and untiring industry, or choice spirits, who have broken through the difficulties and disadvantages which wall around penury and unfostered genius, borne the highest honors of schools, and have plucked the deathless laurel from the loftiest eminences that soaring genius can attain.

Within the precincts of these nurseries of learning, all the superficial and transitory distinctions of wealth, birth, and place vanish, and they all assume their natural equality, except when the child of orphanage, or destitution, rises higher, or throws into the shade the young scions of aristocracy, or the adventitious plumage, and native imbecility of the sons of opulence show more garish.

Thanks to those liberal and far sighted statesmen and philanthropists, who have planted these beacon lights, to direct their posterity to the haven of priceless commodities, and have shown by their own bright example, that the way to distinction is open to *all*, and so long as these time-honored and venerated nurseries of knowledge, have their professional chairs filled with men who can impart lustre to letters, worth and dignity to science; libraries are stored with rare and valuable books; museums and laboratories can unfold the phenomena of nature, and display the wonders of art—crowds of manly and sensible youth must resort to them to train and discipline themselves for the stage of action.

These are the durable springs from which are to flow accomplished scholars, moulded to enter on a professional career, to swell the increasing tide of American learning and elegant composition, to be enrolled as useful masters of those numerous subordinate schools, that shine as lesser lights in the literary firmament, or mingle with the masses whom they will enlighten and elevate.

For every seminary of knowledge, whether it bases or decks the pinnacle of the educational pyramid, forms a link in the vast chain of intercommunication, which will give an impulse to be felt in all the ramifications of civil society.

If these classic grounds have heretofore been too slow and reluctant to colonize modern improvements within their enclosures, it is to be hoped, that the dread of falling in the arrear of the mighty and rapid revolutions of all circulating science, or being crushed beneath the weight of competition, will ere long rouse them to shake off the incubus, which may, in some measure, have paralysed their efforts, and come forth free from the fetters that bind many of their European models.

Indeed, it is a matter of congratulation for the scholar and philosophic statesman to see a majority of our public institutions of learning in the full tide of prosperity.

And long may the stream of private and State bounty continue to invigorate and fertilise their borders.

But it must be a source of poignant grief and deep humiliation for a son of the empire State to see a disposition manifested in the halls of legislation, or elsewhere, to stint their growth by diverting the nourishment from its wonted channels.

Let us not carry our veneration for these institutions at the expense of that just admiration which is due to other edifices, which have been often attacked with petulance and no scrupulosity for the weapons which sophistry and declamation too often and too successfully wield.

Among the foremost of these may be mentioned, the military academy at West Point, environed by nature's great bulwarks, commanding a landscape full of beauty and grandeur, but more exalted for a school, which has fostered talents that have adorned every de-

partment of genius and learning, and spread the glory of the republic to the extremity of the universe.

We stop here to make no encomium on the achievements of her gallant sons, who have fallen in the service of their country, or who now proudly bear aloft the eagle in the tented field, carrying fear and consternation into the enemy's camp, for they are beyond our feeble powers of panegyric; but we would be unworthy the age in which we live, should we not endeavor to trace, though at a distance, her victorious foot-steps in *fashioning* the man, that can investigate causes, has capacity to follow the consquences, and unfold the energy of principles. In a word, that practical ability and masculine sense, that can plan and execute stupendous works. Such as divert rivers from their courses, link lakes with oceans, perforate mountains, throw wide arches over broad and deep streams, open the avenues of trade to distant regions by easy and rapid communications, train wind and wave to the car of industry, and make city talk with city at the speed of sunbeams.

Here all mental training is divested, as much as may be, of *abstractions*. Every thing is demonstrative, practical, and experimental. The monk has left his cell and comes forth all armed and equipped for action. The theodolite, sextant, and telescope, are in his hands as familiar and effective as the keen sabre within the grasp of a veteran warrior. No faltering, no groping in the dark, the way is clear and his vision is cloudless.

The whole secret of this plan of education is that the young man *knows*, and can act well what he knows.

Such a system of public instruction, divested of all the circumstances of glorious war, I should like to see transplanted to your commercial emporium, for the benefit of the great industrial classes, but mainly for the propagation of sound theoretical and practical agricultural learning; which will contribute so much to second the efforts of this munificent Institute, and likewise yield a great pleasure to that community which derive from the earth the most valuable organic productions, and at least its crowning labor, in ripening public opinion to countenance and foster this useful and patriotic *undertaking*.

For the majority of the inhabitants of this State follow the most ancient employments, and in all human probability this art must hold an ascendancy over every other pursuit.

But who does not know, that is conversant with husbandry, and has glanced at the statistics of this growing State, the leading branch of national industry is here very imperfectly developed, and that a moiety of our lands lie in a primeval forest.

Blessed with a rich and various soil, a genial climate, unrivalled in facilities for natural and artificial communications—opulent in commerce and manufactures—abounding in a thrifty population—decked with great cities and beautiful villages, and the earth teeming with rare and useful productions—embosoming an inexhaustible mine of real wealth, a vigorous and intelligent race of men, unequalled in the spirit of enterprise and perseverance, combined with a system of public education, the admiration of the world—nay more, exalted by moral and religious institutions—without arrogance or envy, we may well be called the empire State.

Commanding so many resources, and having so many hidden treasures unexplored, we should be recreant to our trust, were we not to call forth untiring *efforts* to adorn and fertilize our chosen and native country with whatever art and culture can bestow. The existing state of society serves as an additional motive for enlarging the boundaries of knowledge to meet the exigencies of the cultivators of the earth. For this is emphatically the age of progress, and the annals of time can show no period when so many men of reading and reflection have been produced. None teemed with more books, and never before were the great masses so enlightened. To meet these wants, all the departments of science and art demand ready and cultivated talents. And as the mental standard is so much the more elevated, the crisis has come, when the primitive and main branch of industry should take its proper place, and not fall too lazily in the wake of improvement.

Besides, there are unerring indications, from every quarter, that the agricultural classes are awake to the importance of the acquisition and dissemination of those principles whose scope is to advance the prosperity and support the reputation of this great order.

And who that looks into rural affairs does not know that the steps which have been, within the last century, taken towards the advancement of this invigorating and manly employment, have munificently rewarded the hand of operation, and augmented the resources of government.

We cheerfully concede, that the security, stability, and protection rendered by the civil powers to agriculture, have been no small ingredient, but not the *main* element of its *reduplication.*

It is science which has lent a helping hand, and furnished those who were in search of truth with a knowledge of matter, and the laws by which it is governed, and the successful application of its principles tested by frequent and sharpsighted experiments.

And where is the man that professes to tread the lofty eminences of science, and plumes himself on his liberality and reason, who will have the boldness to deny that agriculture, as an art, does not open the very fountains of wealth, clothe the sands and naked rocks with verdure—convert the stagnant and malarious morass into sweet and waving meadows—barren and gloomy plains into fields teeming with golden grain, and wild domains of rank and unsightly vegetation, exhaling contagion and death, into the cheerful abodes of health and independence.

Can this primeval avocation have a subordinate consideration, which shows how animal and vegetable productions may be doubled without even exhausting the soil, the population of a country run up rapidly in numbers, and at the same time be ameliorated with the necessities and comforts of life; how the unseemly and offensive refuse of organic nature may, by the industry of man and physical agency, enter into the composition of the most dainty food; and even how the shapeless iron blocks may color the warm blood coursing the veins of the fleet horse, or paint the lowly violet?

Then in the whole range of intellectual pursuits, what study can be of greater importance than this, if tested by its influence on the happiness and prosperity of nations?

No wonder that men of elevated and benevolent minds are animated with a pure desire to promote the welfare of their species, have associated their wealth and lent their talents and influence, circulated valuable information, and roused public attention to this much neglected department of science. And he must be covered with the rust of prejudice, and breathe the chilling air of torpor, that would fain wish to withhold from the industrial classes a free access to those institutions designed to unfold elementary and profound truths appropriate for every station and circumstance. For does not history teach that an enlightened rural population, fostered, but not crippled,

by the arm of power, has the stamina of every amelioration and improvement?

And in view of the prospects that are opening on every side, and the probable issue of causes and events, which are in present operation, we have a holy mission to perform in qualifying the rising generation with those intellectual attainments germinating those moral principles, which are never failing supports amidst the cares and conflicts of man's earthly existence. Here too will be an inexhaustable mine for their own instruction, a foundation for enlarged comprehension, a mental vision quick but accurate, in the investigation of whatever is passing before them, and a discipline preparatory to their entering into the various avocations that are promotive of the growing wealth and intelligence of the country.

And the like force of circumstances which have brought to light the various educational, literary, scientific and professional schools which are so beneficially scattered over our beloved land, are producing a sensation among the friends of agriculture, and will speedily eventuate in the formation of a seminary every way worthy of private patronage and State munificence.

For the march of improvement has been so rapid, that within a short period many of the liberal arts which did not formerly invade the bounds of the highest seats of knowledge, or were the sole property of the *favored* few, are now being taught to the veriest tyro in the people's school.

Indeed it has been reserved for the nineteenth century to show, that the highest branches of knowledge are not merely curious speculations, the *arcana* of the halls of learning, but the intellectual emanations and extended theoretical views of the sage and illustrious benefactors of the human race, who have stretched the confines of philosophy to the utmost bound of matter and mind, and have brought the fruits of their immortal labors within the reach of the humblest capacity.

Wild and visionary theories, and vague and gratuitous opinions have become unsufferably tedious and offensive to the thinking mind, and the momentons question is asked, will a proposition bear the investigation of facts deduced from the crucible of frequent observations and accurate experiments. And this is the prominent cause of the great advancement in the science of agriculture. And it is very

fortunate that the natural course of things has of late driven capital into those channels which are the most beneficial to the State; and where can it be better employed for the interest of the whole community, than to embark it in *domestic agriculture?* Indeed, were any one tinctured with the rudiments of political arithmetic, he would readily appreciate the immensity of its object, and the extent and grandeur of its operation. For this main pillar is now summoning every department of nature and art to contribute its share in the illustration and development of its principles, and its unrivalled benefits have more than doubled within a single generation, and its culture has been found to exert a reflux energy on its hardy and enterprising friends and promoters.

In inviting the attention of the public to the establishment of an agricultural school, to be located with an easy access to this great city, besides what has already been suggested, it would seem needless to remind so respectable and intelligent an audience, that nothing can be further from our object than an interference with those other admirable institutions which are scattered over our State. We honor their generous founders, and enlightened patrons, and deem the small pittance they have received from the public chest, a poor compensation for the immense benefit they have conferred on the public. And he must be an alien from the commonwealth of letters, and live in the lonely recesses of ignorance, who would ungenerously hint, that literary circles, and scientific bodies could be found in so false a position, as to make the least show of hostility to the implantation of agricultural learning in that generous soil which already abounds in other rare and delicious fruits.

Inded, we flatter ourselves much on the advantages, that will necessarily accrue to the contemplated school in being found in so fortunate a location, as to afford the means of co-operation and assistance of able and qualified professors, to fill the chairs to be set apart for its liberal instruction.

Science and literature are strong in affinity, and radiate their heat and light as the bounteous earth and the superincumbent air distil the gentle and seasonable dew.

Can that man be found who has traced one of the great elements of wealth to its unfathomed beds, who does not see, that from the agricultural population are recruited the muscle and bone, which give motion and strength to the body politic. Look at your workshops, counting-houses, exchanges, the offices surfeited by the learned

professions, and last, but not least, the daily labor of that mighty crowd, who swarm in the busy city, and to which they yield the ceaseless hum and nimble capital. A great majority of these drew the first sweet breath among the mountains and valleys, meadows and cornfields. And what constantly supplies the fearful havoc made by wear and tear, disease and death in your ever vacillating but incessantly replenished population? The heavy contributions that you levy on the rural masses.

Well may you feel a deep solicitude for the physical, moral, and intellectual cultivation and improvement of those who toil in the field, and your policy is far sighted in beginning at the foundation, for if you expect the streams to be pure and limpid, the springs must be fed from crystal fountains. Let us stand on the educational platform, as there is yet abundance of room for the incorporation of the liberal arts with agriculture and its kindred pursuits. It would seem an unmerited reflection on this enlightened period to speak much in behalf of assisting young men destined for the productive classes, in the acquisition of those branches of knowledge which the community demand. For whatever unfounded prejudices which may have heretofore prevailed in certain quarters and made a faint show against rural economy, as a science to be taught as an elegant and useful pursuit, have at last subsided, and there is a deep and abiding conviction, among the sober and thinking multitude, that the liberal arts should be enlisted in the service of agriculture.

The public have already been put in possession of my views of an agricultural school, and experimental and model farm. And it would seem a mere recurrence to the same topics of argument, to repeat them in this stage of my observations. However, allow me here to say that this is my only source of regret, that the published document which came from my hands did not find in me an advocate commensurate with its momentous and lasting importance.

I ask the indulgence of this audience for a little time who have listened to me with the kindest respect, and the most colourable inference to be drawn from this, is that they take a lively concern in that art by which human life is sustained, and not to the manner in which this subject is presented to their candid and deliberate consideration.

It must come to your observation, gentlemen, that I am a friend to a judicious and elevated agricultural education. And that the plan of its execution and completion be blended with a regular and pa-

rental supervision and government, and tested by accurate recitations and stringent examinations. Either in its incipiency it will fall a victim, to imbecility, or be eclipsed by keen and active competition—a calamity which alone can be averted by a superior standard of attainments, and a popularity acquired by accomplished professors and pre-eminent local advantages.

For everything being equal, an inferior course of instruction ever sinks an institution of learning to its own corresponding level. It is a noble emulation to mount on high ground; here the student can take a survey of the whole field of operation, or fill his soul with a glowing aspiration for substantial utility and excellence. Just as a traveller ascends some lofty height where the eye can have a boundless prospect of the embellishments of art and the magnificence of nature, which will swell his heart with the sublimest emotions. Let there be a nursery where there will be a healthy growth of mathematical knowledge, an appreciation of the mental triumphs of past generations, embodied in facts and a coincidence with the experience of practical men. The principles of mechanism, in a liberal sense, in order to calculate the amount and expenditure of laboring force, the motion of machinery, and the investigation of its properties, the theory of the steam engine, a complete mastery of mensuration, together with physics, are the largest and most philosophical doctrines which can form the practical and intelligent farmer. For they have a tangible reality, and come in requisition in rural economy.

And what can be paramount in a republican government to a mental discipline, that will train the aspiring youth to arrange his ideas in a proper order, investigate the nature of evidence, and be deeply versed in the fundamental rules of rhetoric and composition. I would by no means have him ignorant of general laws, but more particularly state and national constitutions should be treasured up in his ingenuous mind. And who can estimate the importance of chemistry, geology, and electricity, which lie at the very foundations of scientific agriculture?

And what is better calculated to elucidate the best method of improving the breeds of the lower animals, than comparative anatomy and animal physiology? Botany must have a prominent place in the course, and whatever relates to the growth, acclimation and artificial improvements of plants, especially the cerealia, grapes, forest, shade, fancy and fruit trees, esculent roots, together with noxious weeds, should be at the perfect command of the student, and in order

that he may follow the wake of civilization, he should be familiar with the French language. No country in Europe is advancing more rapidly to the highest pinnacle of prosperity than that beautiful and enchanting region, where this polite and courtly language is spoken. There the arts and sciences are made accessible to all. France has long been the mirror of fashion and standard of taste, whither the flower of all nations resort to acquire the last polish of which man is susceptible. A fluency in speaking and facility for writing this language in a great trading nation, whose commerce is the whole world, will be found a potent and flexible instrument for diplomacy and commercial agency, and also the useful and ornamental appendage of the scholar and traveller beyond the bounds of his own vernacular.

The German and Spanish tongues are now playing an important part on the American continent, but inclination, or future destination may shape the course of the student, whether he shall drink the deep melodies of Goethe, or enjoy the inimitable wit of Cervantes in their native beauties. And what *more* can I say for those unrivalled remains of the ancient masters of the world, the humblest offering I can bring to their hallowed shrines, is a hope that his ear has at least been attuned to the immortal strains of the prince of Latin poets.

We trust that the enlightened founders of the contemplated plan, will early appropriate a fund in addition to the other liberal provision, for a professorship in Veterinary Surgery and Medicine. We have already hinted that comparative anatomy and animal physiology would be very desirable for an accurate acquaintance with the different domestic animals, but this department in the animal economy, stands in a higher position, when illustrated by lectures, and dissertations, familiarized by frequent visits to a museum of anatomical preparation, and pathologically exhibited by specimens of diseased organizations. And what will still more enhance the pleasure and proficiency in the acquisition of this much neglected science, is a hospital, where all forms and symptoms of disease and casualities come within the observation of the patient and investigating student.

A museum of economic geology, or a grand depository of the mineral treasures of this country and foreign regions, would be of immense utility, and every fresh discovery be a desirable accession to the useful and ornamental arts. But these benefits remain untold, when they and other specimens of various soils, furnished by the different localities, classified as far as may be, according to their

adaptations to the diversified productions of the ground, and not to speak of the almost infallible criterion by which we may determine their quality from the rocks they overlay, or their crumbling ruins mixed in organic matter, are replete with the most wonderful phenomena.

Here will be a great attraction for intelligent and public spirited farmers to bring specimens of their soil for a scientific analysis; and thus afford facilities for the sale or exchange of real estate, and have an occular demonstration of the peculiar capability of each farm for crops. And which is a great desideratum in rural management, to know what seeds should be committed to the earth, and what will save capital, labor and fertilization, and attain as much or more value.

For it is a fact, well known to the naturalist, and should come to the knowledge of every sunburnt farmer, that the humblest plant that springs from the earth, is fed by many simple, proportionate, and elementary bodies, for which there is no substitute, and without which, the vegetable can never reach its perfection. So the supreme architect has benignly ordained, that these elements should be scattered over the globe in unequal profusion, and their connection with climate and artificial amelioration are the beautiful but variegated habiliments, which clothe all nature in the most lovely but useful livery.

In the same department should be placed a Chemical Laboratory, where the student will be shown all the discoveries and improvements which have been made in chemistry; a science which has completely revolutionized the productive powers of man, and scattered to the winds the wild theories of false philosophy, and discovered the secret ways of nature in the production and dissolution of all the affinities and combinations in vegetable and animal physiology.

The model and experimental farm, for they may be one and the same thing, must be the student's great laboratory. Here the eye will be presented with a specimen of the most eligible rural management, the attainment of the largest and most endurable profit, in comparison with the means employed, and the most economical modes of agriculture, beautifully but efficaciously illustrative of sound principles of field and cottage husbandry.

A careful avoidance of fancy farming, or the employment of expensive means of ameliorating the soil—a healthy but constant ad-

vancement to perfection, combined with a systematic aim, familiarized by repeated operations and observations, and joined with ability to modify each particular case, as time and circumstances shall dictate, is the true secret of success in all practical farming.

Fortunate must the projectors of the plan be, if they can find a spot so felicitously formed as to be susceptible of every variety of animal and vegetable production, congenial with climate, soil and the circumstances of each producer.

Such an institution can be established in the neighborhood of any city in this great State, wherever a space of ground can be procured, though limited, and will if rightly directed have the necessary resources to demonstrate whatever can be done by mechanical and scientigc culture.

For the experience of Europe has shown the practicability and the great utility of such schools, and that they flourished amidst an opulent and dense population. This need not excite surprise, when we come to penetrate into the principles and foundations of agricultural wealth; though the most ancient and honorable art, it has been found to expand most when stimulated by the wants of manufacturing and commercial industry. And these in all times and places are the perennial streams of opulence and population.

This is the arena for the young agriculturist to perform with promptitude and agility his rural revolutions, and have in his mind a kind of admeasurement of seasons, the nature and value of soils, and all the elements of labor. This is assuming the manly gown, and being shielded against all the conflicts that assail his earthly passage. And the rude mass must be very imbecile or dark, unless it can act its part on the great theatre of public action, and be adorned with the greatest accomplishment, that can fall to the lot of one who follows the oldest employment, the mastery of the practice and science of rural economy. We rejoice to see a new era dawning on scientific agriculture. Yale, an Institution held iu so just veneration for its age and learning, and cemented and confirmed by a bright catalogue of illustrious men, who have been the lights of the western continent, and pillars of the republic, in peace and war, has recently with a commendable zeal, established an agricultural chair, thus affording the advantage of a scientific education for agriculture, to a crowd of students that fill her honored halls. It is to be hoped, that her sisters in this and other states will fall in her wake, and im-

part a clear idea of agricultural science and its importance to the rising generation.

This establishment will not, I trust, have any affinity to those sickly and ephemeral manual labor schools that have been erected with the laudable motive of opening resources to the young and indigent student, who has a generous aspiration for classical literature or the sciences, but whom chill penury compels to sustain his academical expenditures by his own muscles, without the smallest idea of proficiency in agriculture and mechanic arts.

The main element of the farmers' school should be to foster every science which lies at the basis of sound agricultural learning, but makes her own the grand leading principle. And the experimental farm will, under judicious hands, test and perfect agricultural experiments, by the introduction, or artificial improvement of new specimens of animal and vegetable productions.

There is much theme for congratulation, that so many distinguished agriculturists have arisen from occupations not assimilated to their new and ancient pursuit, by the instrumentality of science, and a disenthralment from the shackles ef early prejudices, so detrimental to the full development of human energies, and the progress of great improvement.

Those whose curiosity was not limited within the circle of their own profession, and to whom a course of academical studies was no impediment to the growth of qualities conducive to success, shine as constellations among the starry host, with a prominent and unrivalled lustre. For the man of science, skill and observation, applies his time and talents—nay, more, his fortune, to the advancement of agriculture; but the dull plodding laborer originates nothing, any more than the beast with whom he labors. Give that excellent laborer even the lowest rudiments of education, and let him be armed with perseverance and good sense, and his vigorous and fertile mind, without the advantages of wealth and liberal instruction, will have an element to fill the course of a Buel or a Fulton.

A Virgil tunes his harp to those imperishable rural strains which bring back his countrymen, distempered and goaded by the disease and stings of civil wars, and they rush to adorn the altars of Ceres with her own grateful and harmonizing productions. And the Roman government hastens to encourage the acclimation of articles of

the vegetable and animal reign of the happier climates, and the industry of the Oriental world. And his own Italy soon puts on all her beauty and loveliness. Campania is covered with charming retreats and stately villages—and the genius of *famine* no more stalks abroad till the VANDALIC hordes sully the imperial purple, and break the iron camps that united the massive foundations of that renowned republic.

But we do not stop here; a list of public worthies may be found since the dawn of the sixteenth century who have awoke whole nations from their leaden slumbers, and have transfused a new source of joy and amelioration among the down-trodden masses.

And if the benefactors of our race are to have their appropriate niche in the Temple of FAME, and military prowess, and political intrigue and chicanery, shall cease to dazzle and bewilder mankind; then our own country will ever venerate an Elliott, a Lowell, and a Gaylord—names distinguished in the professional walks, whose minds were richly stored with whatever can illustrate or adorn science. These men were the generous, untiring, and successful promoters of agriculture.

In our father-land, a Fitzherbert, a Young, Sinclair, and Davy, have brought Science out of chaos into order, traversed continents, dove into the recesses of nature, and have treasured up their immense accumulations not only for the benefit of the Agricultural industry of their own country, but have also filled the world with their giant labors. Nor has enlightened France been behind her sister kingdoms in the principles of scientific husbandry. She has produced Olivier de Serres, the father of French Agriculture, and the first introdueer of experimental farming. And what shall we say of a Duhamel, and a Malasherbes? Their aspiring souls were cast in too liberal a mould, and were endowed with too much public spirit, not to acclimate and naturalize, in their native soil, many choice vegetables.

All Germany, since the wars of Napoleon, have awakened from their lethargic slumbers, and their different governments have, with consummate sagacity, established more than sixty Agricultural schools within her fertile territories. Hence have arisen the immortal Von Thaer and the indefatigable Liebig, whose luminous works show how Agriculture, when elevated by Science, can beautify and double the resources of a country.

Mr. President,—I ask the indulgence of this audience while I glance at the subject in another point of view, which indeed fills my mind with the deepest emotions. For, to me, it is a matter of intense regret, that thousands of our young and vigorous farmers are in a state of transition, leaving a fertile soil, salubrious climate, literary and religious associations, homes where peace and plenty dwell, and where labor receives a just and adequate reward, and where frugality can rear her comfortable castle, enterprise find myriads of acres of new and available lands, and that, too, within the reach of ordinary thrift, markets made by physical and artificial facilities accessible to the mountain steeps and lowly dells; and all the arteries of industry are gladdened and vivified by an active, joyous, and moral people; for boundless and monotonous prairies, dark and interminable forests, sluggish and turbid streams, dank and noxious fens, lowly and confined cabins, exposure to the pestilential exhalations of rank vegetation, subsisting at one time on scanty and unwholesome diet, anon on surfeited abundance, harassed with continual toil and alarms, and beyond the pale of the beneficial teachings of education and religion, their life is spent in glutted accumulations, shortened by disease, and rusts in dull uniformity.

The story is not yet told. The ravages of disease will reach the wife, announced in the trembling steps, in the down-cast face and shattered form: her ghostly eyes are slowly and wistfully turned towards the green meadows and babbling brooks of that soil which cleaves first and last in her memory.

Even you see in her emaciated infants no vermilion in their cheeks, and no elasticity in their motions, while the dull and imploring look of the family circle proclaim the phrenzy of home-sickness and unutterable despair.

Mr. President,—I should do violence to my own feelings, did not I advert to this pleasing incident, that our presence has been this evening honored with so respectable an attendance of the gentler sex, an omen which may be deemed propitious to this great undertaking. For, if courtesy did not, truth would compel us to do homage to those who are the earliest and firmest friends of whatever tends to ameliorate our species. And as an American, who has been pained to witness their degradation in other climes, I may feel justly proud of the intellectual and refined bearing of those to whom is committed the sacred trust of budding and training the rising hopes of the country. Delightful companions in the voyage of life!

Your just taste for exquisite harmony and the lovely beauties of vegetable and breathing forms, has been the subject of the happiest effusions of the most gifted poets.

And we hope ere long to take you from the dust and bustle of this mighty city, to a *green spot*, where your eyes can be greeted with the rich and varied productions, and the utility and order, that will prevail on a tidy and neatly arranged experimental and model Farm.

And you, the descendants of those indefatigable sires that have reclaimed Maremmas from the inroads of tempestuous seas, laid exuberant *Polders* on fast foundations, and converted the sandy heath into fields teeming with the rewards of well-directed tillage, show yourselves the worthy sons of the Belgic race.

And you, in whose veins courses Pilgrim blood, let mankind see that you have not degenerated from the high purpose and untiring industry of your own New England, whose barren and rocky shores have been changed into beauty and verdure.

And you, citizens by birth and adoption, of this noble state, the choicest and fairest domain that ever came from the hands of God, join all in laying deep the foundations of this educational edifice, which will do ineffable credit to the rising generation, be venerated by a grateful posterity, and shall last as long as our own Hudson shall march with might and pomp to the ocean, or till the thunders of Niagara shall cease to roar.

OPENING ADDRESS

Of the 20th Annual Fair, on the 5th day of October, 1847.

By the Hon. MAHLON DICKERSON, of N. J.

GENTLEMEN OF THE AMERICAN INSTITUTE, AND FELLOW CITIZENS:

It must be a source of the highest gratification to the friends of domestic industry, to behold the splendid exhibition of this twentieth anniversary of the American Institute. A magnificent display of what American industry has done, and a cheering assurance of what it can do, and what it will do, if protected against the blighting influence of the capital, skill and pauper labor of Europe. And this must be more peculiarly gratifying to the early members and founders of the Institute, by whose persevering zeal, with the aid of the Legislature of New-York, it has, from small beginnings, become an instrument of great power in promoting the prosperity of the Union, and in carrying out the patriotic views of the Legislature, under whose patronage it exists.

It was founded "for the purpose of promoting and encouraging domestic industry in this State and the United States, in agriculture, commerce, manufactures and the arts."

Its liberal character, while conferring important favors, imposes important duties, which duties are expressed in concise and explicit terms, and willingly assumed by the Institute. They are important and arduous. That they have been performed with untiring zeal, the present exhibition affords the most satisfactory evidence; and it is highly gratifying to know, that the exertions of the members of the Institute are duly estimated by the Legislature, and that they continue to enjoy its aid and patronage. Under such auspices and such protection, its march will be onward.

It will be observed, that the charter enjoins the promotion and encouragement of domestic agriculture, domestic commerce, domestic manufactures and domestic arts, evidently with a view that we may be less dependent upon those which are foreign than we heretofore have been.

Agriculture is placed in the first rank, and justly so. Throughout the civilized world, agriculture is considered the most important pursuit of man. No nation that receives from abroad a large portion of the food necessary for the support of her population can be truly independent, unless, indeed, she can draw her supplies from subject or conquered provinces, as was sometimes the case with the Roman empire. Of this important truth, no nation is more sensible than Great Britain. Hence have arisen her regulations for the encouragement of agriculture. Hence her corn laws, which, for many years, have been carried to such excess as to be highly injurious to all kinds of industry, except that of agriculture; and so oppressive to the poor and laboring classes, that in the opinion of those well acquainted with the subject, they have brought to an untimely grave twenty thousand human beings a year. Nor have those laws been abandoned or suspended, even during the famine of the past or present year, till the poor of Ireland, Scotland, and even England, were perishing of hunger, in numbers still more appalling.

The corn laws, such as they have been in times past, can never be re-established in Great Britain; but her agricultural interests will continue to be protected in preference to all others. So it will be with France, and all other nations of Europe with which we have commercial relations. All of them will avoid, as far as possible, the necessity of depending upon foreign supplies for the food required for the subsistence of their people. And in common years, the agricultural products of all Europe will be equal, or nearly equal, to their wants. They will require but little of us.

It is true, the United States might be considered as the granary of Europe, if the nations of Europe would so consider us, and neglecting their own agriculture, depend upon us for their daily bread; but that they will never do when they can avoid it; they will never depend upon foreign supplies, but when their own crops fail, as during the last year. And generally the West Indies will afford us a more valuable market for our breadstuffs than all Europe put together. The encouragement of agriculture is of vastly more importance in nations where the utmost exertions are required to produce the food

necessary to the subsistence of their population, as in Great Britain, than it is in nations producing a surplus for market, as in the United States. The absolute want of food is the greatest calamity that can fall upon a people; even a panic fear of famine, where there is no danger, gives rise to the most villainous speculations, and creates the greatest distress and suffering among the poor.

On the other hand, a surplus of food beyond the demands of the market, may create a loss, but no real distress; the agriculturists fail to realize the entire amount of their anticipated profits, but the loss falls upon those who have enough and to spare.

The United States produce, and will probably long continue to produce, a surplus beyond any demands that can be made upon them. But let it be remembered that this may not always be so. In the years 1835–6 and 7, we imported wheat and flour for domestic consumption. In 1837 we imported flour to the amount of $122,675, and wheat to the amount of $4,154,000. The necessity for those importations had a most injurious effect upon the industry and prosperity of our country.

The next duty imposed upon this Institute is to promote and encourage industry engaged in domestic commerce, or, in the language of the constitution, commerce among the States; a commerce which has not received the attention its importance merits.

This was a favorite subject with my predecessor, General Tallmadge, who embraced every favorable opportunity of bringing it before the Institute and the public, urging its great importance with convincing arguments, documents and statistics, as many here present must recollect.

Foreign commerce has always been deemed of paramount importance. Indeed, without it we cannot be a great nation. This has been a primary object with our most eminent statesmen and legislators, from the commencement of our government; and such has been our success that our vessels float upon every ocean and in every clime, carrying the products of our industry to the most distant regions, and bringing us in return the most precious products of foreign countries. For this the Congress of the United States have appropriated millions of dollars in improvements on our harbors, bays and coasts; for this, in part, we support our navy; for this we maintain a diplomatic corps at foreign courts, and for this we incur the enormous expenses of foreign wars; and by this commerce we

introduce foreign influence, highly prejudicial to the best interests of our country; by this we introduce foreign principles utterly at variance with our free institutions, and by this we introduce the luxuries, follies and vices of the corrupt governments of Europe. Yet every true American will say our foreign commerce, cost what it may, must be encouraged and supported; but how much more earnestly should he say, our domestic commerce must be encouraged and supported, cost what it may.

Our domestic commerce is in amount ten times greater than our foreign; it promotes American industry exclusively; it establishes the most friendly relations among the states; it strengthens the Union; it requires no warlike navy—no diplomatic corps; it leads to no wars; it introduces no foreign influence, principles, luxuries, vices or follies. And yet, comparatively speaking, little has been done for its encouragement by our General Government.

No country, not even China, presents so many natural advantages for carrying on a most extensive domestic commerce as the United States. Our immense lakes and rivers, if properly improved, afford the means of transporting the products of our most Western states to the Eastern, to each other, and to the ocean, the great highway of nations. But to make these advantages available, large expenditures of money must be made for improvements on those lakes and rivers. And why have not such expenditures been made? A jealousy between the Atlantic and Western,—the old and the new states,—has had an unfavorable influence, to which may be added the constitutional scruples of some of our members of Congress; these have prevented the proper appropriations. The first of these causes will soon disappear. A better feeling prevails between those states than formerly, and their interests are considered as identified by our most eminent statesmen. As to the second cause, it will have less weight than formerly, for the overwhelming influence of the great Chicago Convention of July last will have a wonderful influence in removing constitutional scruples.

There will be a great difficulty in legislating upon this subject by the Congress of the United States, arising from sectional interests, which will lead the members by bargain and compromise, to include in the same bill of appropriations too great a variety of objects, and thus secure a majority in its favor, by a process well known at Washington, and vulgarly called log rolling. By this process, appropriations which are proper will be connected with those which are impro-

per, thus embarassing the President, and constraining him, as has been the case, to veto bills, the most important parts of which met his entire approbation. The Maysville road may be cited as a case in point, requiring the exercise of the veto power.

These are difficulties which must and will be obviated, when there shall be more distinct manifestations of the public feeling in favor of such internal improvements as are necessary to the success of domestic commerce.

It would be a painful task to state the dangers, difficulties and great destruction of life and property in navigating our great lakes and rivers for want of harbors and other improvements, which would require but moderate appropriations, compared with those made for like harbors and improvements upon our Atlantic coast. These may be understood, by reading the proceedings of the Chicago Convention.

It is mortifying to compare what has been done by the British government in favor of the commerce of their American colonies, and what has been done by our government in favor of that of our Western States. There is a safe steamboat navigation from the mouth of the St. Lawrence river to the head of Lake Huron.

The difficulties and dangers of passing the rapids between Montreal and Kingston are overcome by the deep and broad canals of Lachine and Cornwall. The Niagara Falls are surmounted by the Welland Canal, leading directly from Lake Ontario to Lake Erie; a canal 56 feet wide, 8 feet deep and 53 miles in length, made at an expense of more than four millions of dollars: and a like communication will soon be made from Lake Huron to Lake Superior, by a canal on the British side of the Sault St. Marie; so that the produce of our copper mines on Lake Superior will find its way to market through British canals and over British territory. Even the Rideau canal, of comparatively small importance, has cost more than four millions of dollars. All these improvements, and many more, have been made, chiefly by the aid of the British government, for the benefit of their colonial commerce; and also, with a view to military purposes, in contemplation of a war with this country, whenever they shall fail to gain the advantage over us in all our negotiations and treaties, as they have never yet failed to do since 1783, except always as to the right of search, for which they fought us once, and for which they will fight us again when their convenience will permit.

How far the constitution gives power to Congress to make appropriations for internal improvements necessary to the success of our domestic commerce, I will not undertake to say ; but this I will say, that whatever may be done for foreign, may with equal propriety be done for domestic commerce. If Congress can make appropriations for the improvement of harbors on the Atlantic, they may make appropriations for like improvements upon our great lakes and rivers. If they may make break waters on our sea-coasts, so they may upon our lakes. If they may remove bars, shoals or other obstructions to navigation at the mouths of our great rivers, so may they remove like obstructions in other parts of said rivers where the safety of commerce may require it. For such expenditures upon our Atlantic coast, our statute books show appropriations to the amount of many millions of dollars, under all administrations, the constitutionality of which is not now to be called in question. If Congress have the power to authorise a subscription for part of the stock of a company engaged in making a canal, by which the commerce of the country is to be promoted, they may subscribe for the whole stock ; that is, they may make the canal. Yet such subscriptions have been made under the most cautious administrations.

If Congress may appropriate money's worth, as land for instance, to internal improvements, they may appropriate money itself to such improvements. Yet such appropriations have been frequently made, with the assent of those who deny the right to appropriate money to such improvements. The constitutional power to appropriate money rests upon the same basis with that to appropriate land ; yet it is often expedient to appropriate land when it would not be so to appropriate money. We frequently have but little unappropriated money in the treasury, but always abundance of unappropriated land. And often large tracts of public lands may be doubled in value by ceding a part for internal improvement, as granting, for instance, alternate lots upon the route of a canal through the public land.

It is disgraceful to the country that the natural advantages of our great lakes and rivers remain unimproved, and nothing can be more unjust than that the expense of making the necessary improvements should fall upon the States in which they are to be made. The expense of making the Illinois canal, in which our whole country is interested, should not fall upon the State of Illinois ; nor that of Louisville upon the State of Kentucky. These and the like improvements are for the general benefit, and should be made at the common expense.

The money expended upon the Lachine and Cornwall canals would be sufficient to render the navigation of the upper and lower rapids of the Mississippi safe and easy; and the money expended upon the Rideau canal, an improvement of inferior importance, would complete the canal from Chicago to the head of steamboat navigation on the Illinois river; thereby opening a communication between the great lakes and the Mississippi river; an immense improvement, in the highest degree honorable to the country, and beneficial to every State in the Union, more particularly to those of the South.

In making appropriations, however, for those great western improvements, there is danger that Congress may go to excess, as the British Government has undoubtedly done in making theirs. Let the western members of Congress advocate reasonable appropriations for such improvements on our great lakes and rivers as would be deemed constitutional if made on our sea-cosat, and they will meet with a cordial support from the members of the Atlantic states,—and by their joint and harmonious action, the most efficient measures may be adopted for the success of domestic commerce and the promotion of the general welfare. But the harmony necessary for all this will probably be interrupted by the incessant agitation of a deep laid plan, by means of laws for graduating the price of the public lands, or otherwise, to deprive the old states of their proper share of the public domain, of inestimable value, and obtained at the expense of their blood and treasure.

To correct all this, and to prevent new causes of jealousy between the old and new states, the Chicago Convention seemed highly expedient, and will be attended with the most salutary effects.

This convention should have been free from all party considerations; yet such just suspicions were entertained that party views with respect to the next Presidential election prevailed in calling it, that some of the best friends of the avowed objects of the convention stand aloof for the present. And certain circumstances afford some grounds for such suspicions. All the prominent candidates for the Presidency were written to, for the purpose of obtaining their opinions; somewhat after the manner of the last Baltimore Convention. And facts occurred at the convention, showing distinctly, that party views were entertained by a few who attended; but the designs of a great majority of them were truly patriotic, and such as should command the confidence of all parties, in every section of our country.

Another duty of the Institute is, the promotion and encouragement of domestic industry in manufactures. More than half a century ago, the Congress of the United States commenced a system of protecting American agriculture, commerce and manufactures. Of the products of agriculture we received but little from abroad that could come in competition with our own in our own market; but such as could were made subject to such duties as afforded sufficient encouragement to our own produce at that time.

As to our commerce, it was completely controlled by British capitalists. The greater part of our carrying and even coasting trade was in their hands, making our condition worse than it was while we were colonies. This was not to be tolerated. On the 20th of July, 1789, Congress passed an act for the purpose of encouraging and protecting our tonnage and navigation against foreign competition, by high duties. In this case the duties were not imposed for revenue, with incidental protection to our shipping interest, for they were prohibitory. Protection alone was the object of the law. Its success was complete. Fortunately for the country, the *revenue standard* had not been discovered, or rather invented at this time.

With regard to protecting manufactures, Congress proceeded with more caution. It was feared that there was not sufficient skill and capital in the United States to enable us to contend successfully in this branch of industry with the skill, capital and cheap labor of Europe. The importing merchants in our commercial cities, a great portion of them British subjects, or in partnership with British manufacturing houses, were from *interest* opposed to all American manufactures. There was still among us a lurking and strong partiality for British mannfactures, particularly among those who were in favor of British principles, fashions and distinctions in society. Such were opposed, from *folly*, to American manufactures. Even as late as the war of 1812, any one of our fashionable dandies would have been ashamed of being caught in the fact of wearing a hat, coat or breeches of American manufacture. These, with many other circumstances, co-operating with the whole weight of British influence, had a decided effect in retarding the early progress of domestic manufactures.

On the other hand, the report of Secretary Hamilton upon this subject has proved the vital importance of establishing and supporting American manufactures. And Mr. Jefferson, when Secretary of State, recommended the imposition of duties upon the products of

foreign industry, *lighter at first, but heavier and heavier afterwards,* as other channels of supply open: "Such duties (he continues) having the effect of indirect encouragement of domestic manufactures, may induce the manufacturer to come himself into these states, where cheaper subsistence, equal laws, and vent for his wares, free of duty, may insure him the highest profits from his industry." These are true grounds for encouraging and protecting domestic manufactures.

Mr. Madison, in accordance with this recommendation, entertaining the same views upon this subject with his friend, Mr. Jefferson, introduced into the House of Representatives a resolution, "that the interest of the United States would be promoted by farther restrictions and higher duties, in certain cases, on the manufactures and navigation of foreign nations employed in the commerce of the United States, than those now imposed." He thought as Mr. Jefferson did, that such duties and restrictions would bring foreign laborers to our country, and he preferred, as stated in his resolution, that three hundred thousand souls, who lived by our custom, should be American citizens, rather than British subjects.

Mr. Jefferson and Mr. Madison had not discovered that duties must be laid with a view to revenue alone.

While our laborers engaged in manufactures have to contend with the pauper labor of Europe, they must receive the protection of our government, or abandon their business. Our manufacturing laborers alone, have to contend with this difficulty. Our other branches of industry do not suffer by it. Our shipping and navigating industry suffers but little from foreign competition, and our agricultural industry still less, except in the article of sugar, which is as much the product of manufacture as of agriculture.

For more than thirty years a constant struggle has been maintained between American capital and free labor, and foreign capital and pauper labor, for the supply of our own market with manufactures for domestic consumption. Yet we import from foreign countries, chiefly from Great Britain, manufactures to an immense amount, of kinds that might be produced in the United States, to the entire wants of the country, and in the highest perfection, as the exhibition at this fair affords the most satisfactory proof.

I will detain you for a few moments in detailing a few of the articles thus imported.

In the fiscal year ending on the 30th of June, 1846, we imported, chiefley for domestic consumption, of

Cloths and cassimers to the amount of (omitting fractions,)	$4,192,000
Worsted stuff goods,	2,638,000
Dyed, printed and plain cottons,	10,350,000
Linen,	4,492,000
Earthenware, paying ad. val. duties,	2,262,060
Plain, white and other manufactures of silk, paying ad. val. duties,	8,445,000
Brandy,	839,000
Brown sugar,	5,948,000
Pig and bar iron and steel,	4,000,000
Manufactures of iron, paying ad. val. duties,	3,933

These importations, and many others of smaller amount, were not made for the encouragement of American, but of foreign industry. Yet we have become so accustomed to such importations that they excite but little interest. I will not dwell upon this endless subject. Happily there is not at present any unusual pressure upon our domestic industry from foreign competition. Notwithstanding the tariff of 1846, and the expensive war in which we are engaged, the whole business of the country is unusually prosperous. The late unprecedented famine in Europe has created a demand for the products of our agriculture to an extent never before known. Great Britain, drained of her specie, sent to this country in exchange for food to save her people from perishing with hunger, has been so crippled in her manufacturing industry that she has not been able to glut our market with her goods; and the rage for building railroads in Europe, as well as in the United States, has created a demand for iron exceeding the immediate power of supply, there or here. These are the causes of the prosperous condition of American industry.

But how long can this prosperous state of things last? There no longer famine among the nations of Europe. Their harvests have been abundant. They will cease to send us specie in exchange for an increased quantity of our agricultural produce, except cotton, rice and tobacco. On the contrary, we must send them specie in exchange for their manufactures, which, from a new impulse given to their industry, will be produced in excess. This revolution has already commenced, although not seriously felt as yet. If upon our

reduced scale of duties our revenue from customs is increasing as rapidly as reported, it must be from excess of importations of foreign goods. It appears that the receipts at the New-York custom-house for the month of August, this year, are greater than ever before known. If this be continued, how soon will it involve our country in pecuniary distress? The friends of free trade assure us that there is no danger. We shall see. We must wait patiently for results, and hope for the best. But if, two years hence, our country shall be found in the condition to which it was reduced in 1842, by the excessive importations under the operation of the compromise act, the same remedy which saved us from bankruptcy then, will again be applied, by the irresistible force of the public will, without the least regard to party considerations, which indeed should have nothing to do with the subject,—and in defiance of every principleof the universal system of free trade,—asystem as visionary and impracticable as the everlasting and universal pacification of the world.

ADDRESS

During the Twentieth Annual Fair.

BY WILLIAM WALLACE, ESQ., OF NEW-YORK.

I offer the Map of the United States as an appropriate introduction to the remarks that I shall make on the establishment of an Agricultural School and Experimental Farm. I ask you to look at the South, with her vast cotton and tobacco fields; at the North and East, with their immense timber, and immeasurable capacity for raising grain; at the West, with her power of producing animal life; at the middle states, with their inexhaustible beds of coal; at the whole country, with its nine thousand miles of coast; its great rivers and inland seas; its turnpikes, canals and railroads; its broad valleys, towering mountains, and varied climate; its twenty millions of population, and the increasing immigration. Then scan the great mechanical invention of that population; see how that invention can be applied to the implements of husbandry; and last of all, remember that whatever these millions produce is their own, and not the plunder of a tyrant or an oligarchy. Their only monarch is their God, and his tribute is praise and thanksgiving.

Nature writes on this country—"*The Granary of the World.*" Two hundred millions of human beings can draw their sustenance from the soil of the Union; and still that soil, under scientific cultivation, could afford bread to a continent as large as Europe.

A speaker, on an occasion like this, and in view of the vast agricultural capacity of the United States, might well enter into an eulogium on agriculture; but I shall not utter it. I shall leave that eulogium to abler orators. Let the beauty of agriculture be spoken by the golden mouth of the harvest; let her healthfulness be celebrated by the athletic frames of those who minister before her emerald altars; let her usefulness be recorded by the myriads whose

physical life she sustains, and her moral grandeur shall be unanimously attested by the sages and bards of the past and present. The best eulogist on agriculture is herself. There she roams in broad valleys, and on sunny mountain sides; by rejoicing rivers and glad oceans: there she towers with her luxuriant wreath, amid her bloodless empire;—let her speak for herself, for God has given her a mighty and eloquent voice. Eden heard it—the earth hears it.

To our own free countrymen has been entrusted the immense American domain, by a beneficent Providence. God made earth, but man must make it productive. To idleness and ignorance that earth presents slow-moving or inarticulate lips; but to Industry and Science it leaps up with smiles and with voices in the sunny field, and the flowery garden, and the golden orchard, and the harvests, whispering of plenty and content. Man dare not fold his arms while his God goes forth in the pomp of Heaven and awfulness of Eternity, to sow the continents of space with the germs of suns, planets and systems. Idleness is practical blasphemy; labor is sublime worship. Its ritual is composed in a language that all can comprehend; its psalms are understood by all, as they swell up from island and continent to the Lord of Hosts.

Idleness forms no part of the American farmer's character. Our immense exports prove this. Nor is he satisfied to sit down in the valley of the shadow of ignorance. Look at the common school system, at the State Fairs, at the American Institute. But has the American agriculturist yet reached the ultimate of his intellectual destiny? and, as a consequent, has science planted her last monument on the soil? We are, in fact, but in the *dawn* of the scientific agricultural day. For if so much has been accomplished by a few, in the last fifteen or twenty years, what may we not expect in the next half century, if those few shall be followed by thousands who bring cultivated minds to bear on the proper treatment of soils, and other *materiel* connected with agriculture! The question with us is, shall the numbers of those who cultivate science with a view to husbandry increase? Only let our industrious farmers be convinced that this science is absolutely necessary, in a physical point of view, and that it ennobles their calling, and we will have an answer unanimously in the affirmative. No subtle ratiocination, no splendid eloquence are necessary to lead their minds to the necessary conviction. Give them facts; show them the magnificent results of chemistry, in its application to their business; array before them the intimate connection of mechanics with the farm, and the friend of progress need

not fear the result. Time was, when a new-fashioned plow was regarded as an invention of the devil; that time has passed. Heaven is blessed. Pandemonium no longer plants on its horrid front the gems gathered by science in the arcana of nature.

Farmers of New-York! do not suppose that you can array yourselves in the ranks of those who are not "called by their situations in life to assist in extending the bounds of science." Your profession, if you are true to it, demands that you shall assist in extending those bounds. If you are not true, loss of wealth, and shame when you hear of the success of agriculturists in other countries, who place a proper estimate on their noble pursuit, must be the result. Philosophy woos you with smiling face and beckoning hands; she offers to lead you through her vast and splendid museums of physical truths; she is ready to pour out on your plains her fructifying spirit. Some who have already accepted her invitation, can witness that she is no vain promiser. Do you ask facts? They will give them. An eminent writer says, "it is the duty of the chemist to explain the composition of a fertile soil; but the discovery of its proper physical state or condition belongs to the agriculturist." Now, it is known that such discoveries, made by educated farmers, have caused large tracts of land, which have been deemed worthless, to yield most bountiful crops. Again, what vast benefits have accrued to many, by a knowledge of "the necessity of alkalic bases to vegetable life." That knowledge was the result of science. Those who have obeyed the call, will place before you a large variety of subjects whose mastery they can prove your interests demand. Do you not see, almost by intuition, that you should know the constituent elements of plants, the origin and assimilation of carbon, the origin and action of humus, the proper rotation of crops, the *rationale* of manures and fallow, the formation of arable land, the causes which affect fermentation, decay and putrefaction; the causes of contagions, poisons and miasms? See what two men have effected by mastering these subjects, and by being true to their profession. The purse has always possessed an eloquent tongue. I here couch my arguments in a style that cannot be too *figurative* for the most fastidious taste.

"After some desultory conversation on various subjects, Mr. Meigs read the report of the Committee of the Club, who, on the third inst., visited the farm of Messrs. Cooper, near Bushwick, Long Island. It may be interesting to our readers to note, as follows, what intelligent and persevering practical farmers may cause the land of even a small

farm to produce. Figures do not lie—look at them. The proprietors are young men, whose farm, when they first came into possession of it, a few years ago, was of a very indifferent quality. They have used thorough culture and the best manures, and have since added several acres to their inheritance by purchase, at the rate of *three hundred dollars an acre.* With the help of four men, and occasionally men, women and children to pick, they were enabled to render to the Committee statements as follows, all evidently within bounds:

They have supplied the New-York City markets, *this summer*, from thirty acres, with

342 bushels of Peas in the pod, average price 75 cts. per bushel.

1,000 bushels of Potatoes, price 68¾ cents, and 500 bushels yet remaining to dig.

40 bushels per day of Tomatoes; the whole crop estimated at 1,200 bushels, at 50 cents per bushel.

4,000 poles are now thickly covered with Lima Beans, perfectly grown.

1,200 bushels of Bush Beans have been disposed of; average price 44 cents per bushel.

Corn, 3 acres; blue top turnips, 1½ acres; Cabbage, 1¼ acres, 5,000 to the acre; Hay for all their stock; Wheat, 75 bushels; Cayenne Cherry Peppers, a beautiful patch, estimate 25 bushels on one-twentieth of an acre."*

But the wealth, secured by philosophical agriculture, is but of secondary importance, when compared with the moral and intellectual nobility that it confers on the husbandman. That is a profound remark—"The *cultivated farmer* is better than the cultivated farm," for the cultivated farmer is no longer a mere delver in the sod; a mere machine that annually produces so many bushels of wheat; a mere pile of nerves, muscles and bones, that

> "————————lives as the father lived,
> Dies where the father died, and thinks the moon
> That rolls above the head, no larger than
> The father's shield."

I give thanks to the spirit of liberty, the parent of progress, that American farmers cannot merit this description. What I wish, is,

* N. Y. Tribune.

that they should be removed as far as possible from it. The cultivated farmer is a man who plunges into the arcana of Deity; who *knows* the laws by which that Deity himself labors; who sits amid the sweet and awful music of nature's machinery, and learns how he also may produce the most perfect melody in the grain, the flower and the fruit. He is a man who has seen the intimate connection of the sciences; who has practically learned how soils are connected with geology—how geology is linked with astronomy—how nature, in all her statutes, is a many-stepped pyramid, from whose top man looks out and sees the Great Agriculturist and Mechanic entering into a still higher and more subtle domain, the spiritual, where he may express his progressive wisdom, benevolence and glory. Thus the cultivated farmer will make his business a profession which can rank with any in mentality, and rise superior to all but one in purity; yes, a profession which the most intellectual person might enthusiastically adopt; for in a farm he would find a great volume, on whose pages, through the revolving years, he might transcribe the sublime physical truths which his God promulgated. There he should converse with Newton, and Lyell, and Silliman, and Playfair. Nor when he remembers the connection of knowledge, need he forego Shakespeare, or Scott, or Prescott, or Irving. However much or little we may look for belles lettres from the farmer, it is certain that the farms of the United States should produce the leading natural philosophers of the world. With them, theory and practice might walk equally together. Fact after fact should, starlike, burst out of their rural laboratories, until the whole firmament of physical discovery blazed with truth.

In view of the influence of science on the wealth of the farm and the character of the farmer, is it not strange and melancholy that no agricultural school as yet exists in the great State of New York? What does this neglect or callousness mean? For the physician, schools of materia medica have been founded; does not the "the physician of grains" also need schools? Has nature reversed a single one of her laws in his favor? For the lawyer there are schools where the letter and spirit of human jurisprudence are explained; can that one safely neglect primary instruction, who must deal with the statutes of the *arch*-lawgiver? The minister, too, had his school, where he was inducted into the interpretation of the written revelation; the farmer, also, must interpret a revelation, the very oldest Bible, expressed in the all-embracing air, the varied soil, the ancient rocks, and the eternal stars.

Yet what do we find of peculiar applicability to their pursuit in the education of our youth who are to become farmers! *Greek and Latin! Belles Lettres! Declamation!* and these exercises absorb the greater portion of the four marvellous years that constitute the collegiate quadrangular! What would be our estimate of the father who placed his son with a lapidary to learn the trade of upholstery? Now, sound for me the wisdom of the farmer, who plants the son that is to succeed him on his estate, in a lofty marble-columned academy, where he daily vociferates "*hic, hæc, hoc;*" mumbles over the dry bones of antique philologies; takes morning rides in the silken balloon of "fine writing," or works himself up to an awful oratorical rage in declaiming "Gods! can a Roman Senate long debate which of the two to choose, slavery or death!" or that equally as novel passage, "Romans! countrymen and lovers! hear me, for my cause, and be silent, that you may hear!" And then, too, when the hopeful scion of the plain, sturdy, honest husbandman emerges from the "sacred shades of the Academy," flushed with a thousand collegiate honors—his head stuffed with odds and ends from Cicero, Virgil, Tom Moore, and "the Perfect Elocutionist," and his dear soft white hand flourishing on high the illuminated sheepskin, for which he paid precisely ten dollars, and which to him is worth precisely nothing—then what triumphs do I see awaiting him in the field! how Ceres trembles with delight to behold his exquisite waist! how the barns exult in the anticipated crops which those fair hands are to produce and gather! how—but, gentlemen, the majesty of the scene is becoming too oppressive. I must leave the elaboration of the picture to more appropriate hands, fashionable barbers and tonish tailors.

The classical college, however fitting it may be for others, is *not* the institution in which our agricultural youth can be properly educated. They need a school of their own—a school devoted to such knowledges as are required on the farm—a school whose aim will not be to make them elegant linguists, or "very fine writers," or handsome declaimers—but sound, unostentatious, practical philosophers—true American farmers, who can and will ornament a country whose political father was an educated agriculturist, choosing the scythe in preference to the sceptre, sheathing the sword of successful revolution in the sheaf of the harvest, and for a diadem wearing on his broad brow the blessings of the myriad farmers whom he liberated.

A large number of our citizens have proposed the founding of an Agricultural School and Experimental Farm. The Legislature has

been petitioned on the subject: two committee reports have been made—one in favor of the project—the other against it. Is the State of New York to possess the establishment proposed? The general government has planted on her soil a school where the art of destroying human life is superbly taught. Will the State of New-York emulate the energy of the general government in a more noble cause, and found a school devoted to the science of the preservation of human existence?

If the positions which your speaker has advanced are true; if science is necessary to the development of the farm and the enoblement of the farmer's character; if the farmer, to do his work well, must know the laws of matter, then this school and farm will be richly endowed by the state government, ably professored, and permanently established. For the knowledge required by those "who compose four-fifths of our people, and whose business sustains all other occupations," would be best taught in an establishment devoted theoretically, practically, and solely to those branches of human learning which the agriculturist requires. Should the farmer understand surveying? He should; it will be taught. Does he need a knowledge of arithmetic, algebra, geometry, chemistry, geology, mineralogy, grafting, budding, manuring, and the history of agriculture? He does. They will also be taught. Do not occasions often arise when the agriculturist himself must make and repair his implements? Then, in this school will be taught all those principles in mechanics which the farmer's exigencies may demand.

Animal pathology and veterinary medicine should also be taught; there are hundreds of thousands of farmers who daily suffer great loss, and undergo much vexation, owing to an ignorance of the constitutions of domestic animals, and a diagnosis of their diseases.

I cannot more ably continue the list of those things which should demand attention in this school, than by quoting from Mr. Burchard's legislative report. It says, in the agricultural department proper, the general principles of farming and horticulture, including the cultivation of the vine, the breeding of cattle, the growing of wool, the raising of horses, the production of silk-worms, the tillage of all cereal, culinary, coloring and esculent plants that vegetate in the northern latitude; the arrangement and superintendence of farms, their situation, and book-keeping, should have their appropriate place in the general plan of education.

An experimental farm of not less than 200 acres, composed of varied soil, on which suitable dwelling-houses should be erected, may be purchased in fee, by the persons selected to carry out the object. The investment should be judicious. No attempt should be made to imitate some of our higher schools that have private endowments and legislative bounty vested in brick and mortar; a fatal mistake for those who have had the guidance of our first and most celebrated colleges.

The trial farm may be under the superintendence of a scientific and practical farmer, whose duty it shall be to watch over the moral and physical conduct of the pupils residing within the precincts of the department.

He should be very conversant with rural economy, and teach the pupils the practical operations of farming, and keep a vigilant eye on them in the refectories and dormitories, and govern this little commonwealth in like manner as a prudent man directs his household. Let him keep an accurate account of the incomes and expenditures of the establishment.

A matron who is familiar with domestic economy and the various operations of a dairy, and who is estimable for her general information and amiable and motherly deportment, may take charge of the household and dairy department.

The time of the pupils should be divided between manual farm labor and study. The superintendent here has a theatre on which to display his precepts and examples.

The experimental farm, if cultivated upon the best principles of agriculture, and with a view to profit, will attract the attention of the public. Here new and improved farming utensils will be received on trial and their merits and deserts duly appreciated. A museum and general depot will here unfold its rich treasures, and valuable specimens congregated from every part of the habitable globe. A collection of seeds, grain and roots, both foreign and indigenous, nay more, those in process of acclimation, should be stored in the granaries and cellars; on the one hand, as the appropriate specimens of the vegetable kingdom, for lectures; on the other, for sale. A work shop with great propriety may be attached to the school, in which the industrious student may have an ample opportunity to be relaxed from his intellectual toils, and develope his physical constitution to the high-

est perfection in the fabrication of rural implements, whereby much of the evil may be avoided that grows out of a sedentary life; every part of the body may become invigorated, and its health promoted. What can be of a more priceless value to the young agriculturist than a strong arm and manly form, nerved to grapple with the labors of the field, a gymnasium incomparably more available to his person and condition than all the boasted games of antiquity?

Economy and convenience will require a division of the farm into arable land, meadows, pastures, fields selected for experiments, wood land, orchards, vineyards and nurseries. The plow land should be cultivated according to the best systems of rotation and succession, so that the students may have specimens of the varieties of the system. A stock of cattle of different kinds, domestic and foreign, together with the varieties of other animals found useful for man, must have their appropriate space in the arrangement of the farm.

For the illustration of lectures in terraculture, a variety of soils should be found in the cabinet; their analysis and specimens of the means of their amelioration should appear in different cases. The woods, arranged in the forms of a library, and collections of natural history would be extremely useful to the institution.

Such is a general outline of the New-York Agricultural School and Experimental Farm. Is there a farmer in the Empire State who would not be proud of that school and farm? Is there a citizen who would not? Do you not see at once how such an institution would dignify agriculture? How hundreds of young men would be sent out from its portals and its fields to carry the seeds of science and improvement over the whole land? How, under their teachings and examples, the farms of the country would assume a new, a more valuable, and a more brilliant aspect? How hundreds of young men who now rush into law and medicine, (much to their own and the public's loss,) merely because law and medicine are *professions*, would fit themselves with far more enthusiasm for the farm, when science stood in the collegiate laboratory and pointed them to the broad green field, and the beautiful orchard, and the fragrant garden, as arenas where they might vie in usefulness and renown with the advocate, the physician, and the man of letters! Let the farmers give their sons such an education as this school would afford, and our rulers would come from the farm—the enlightened farm, where virtue and science walk hand in hand—the American farm, on which the shade of Washington might well look

down and smile—the farm of freedom, in which all oppression, all despotism, all demagogueism, would read the doom of death.

This school, it has been well argued, should be founded near the city of New-York. Thus located, it will positively succeed, and in any other part of the state its success would be somewhat doubtful. Land of every necessary variety can be obtained as cheaply there, considering its contiguity to the great markets of the metropolis, as in any other section of the country. The farm will be visited by more people, if near the city, than any where else; the chance of obtaining students will be much greater, because the school will be seen and known by more persons than it could be, if located in any other part of the state. It will have, in this location, the advantage of frequent voluntary aid from men of science, and the benefit of the library and apparatus of the American Institute, and the other libraries and apparati of the metropolis. It will receive donations from wealthy patriotic citizens to a greater amount than in any other location. There, it would also have the advantage of the repository for testing improved implements and machines (without the expense of purchase,) and of the great Annual Fairs for the exhibition of machines and other productions of the country. Selections may be made from the vast variety of seeds, plants and animals which come to the city. A location near the city is further desirable, as a greater variety of manures for experiments is afforded there than in any other part of the state. The experiments and results of the farm will have wider publicity through the numerous papers and journals of the city, than they could have from the periodicals of any other place,—and seeds, plants and animals can be more readily transmitted to and from all parts of the country, and of the world, by means of the great land and water conveyances.

It has also been suggested that the school and farm should be under the supervision of the American Institute. Happy will it be for the farmers of New-York, for the rising generation, and for the friends of educational advancement, if that Institute should undertake the task.

He can only doubt this, who is unacquainted with the rise, progress and general history of the Institute. But who is not acquainted with these? The American Institute has secured to itself a noble page in the annals of the American Republic. The professed objects for which the Institute was founded have never been lost sight of for a single moment; those objects were, the encouragement and

promotion of agriculture, commerce, manufactures and the arts. For twenty years have the members labored in the glorious arena, marked out by the founders; and they have their reward, not in dollars, not in costly equipages, not in stately mansions; their reward is higher, purer, and more durable—the improvement of machinery—the encouragement of commerce—the perfecting of rural economies—the rewarding of inventors and artists, and the advancement of national wealth, intelligence and comfort. In eight years, the Institute expended 86,822 dollars for these purposes. In eleven years it awarded 323 gold medals, 446 silver cups, 1,841 silver medals, 5,524 diplomas, and 1,186 books. In the comparatively short period of twenty years, it has secured the confidence of the farmers, mechanics, merchants, artists, scholars and statesmen of the country; and established correspondences with the first scientific associations of the old world. But if all eulogists were silent—if the American Institute had not a friend in the whole country to stand up and declare its merits—if the able Tallmadge and his compeers found not a tongue to speak, or a pen to record their exertions in behalf of American progress, they might calmly point to the Annual Fairs, and feel that they and the Institute could do without the tongue and the pen, the friend and the eulogist. And should the members close its doors for ever, there is not an American flag that shakes down its brightness on the waters, nor an American sail that woos the wind, nor an American machine whose subtle spirit masters the brute forces of matter, but would record the deeds of the American Institute.

I am sure that no one will be astonished to hear that objections have been brought against the Agricultural School and Farm; what project could be proposed, no matter how sound in its theory, or beneficent in its practice, against which objections could not arise? Our present federal government was denounced; Newton's theory of gravitation was labelled "insanity;" Normal teaching fought for many years an unequal battle; steam navigation was ridiculed, and geology was boldly handed over to the devil. No matter. The friends of all these "improvements" had to answer the opponents; and we are not exempt from that law of progress which demands debate. The objections against the Agricultural School and its farm, have been created in a legislative report of May 5th, 1847. Let us examine that report. In the first paragraph, objection is made to the vicinity of New-York as a location, "for the reason that the farmers of the country would not like to send their sons there to be educated, for fear they would imbibe the manners, customs habits and extravagances which usually prevail at or near a large

city." We reply:—1st. This school and farm are not to be *in* the city: 2d. The manners customs and habits of the farmers and their sons near New-York, can compare advantageously with those of the best citizens in any part of the state: 3d. Cannot the students at West Point compare in propriety of habits, with the youth of any portion of New-York? The students of the Agricultural School would be under a moral discipline of equal strength. If they visited the city for recreation, their stay would be extremely limited; if for objects connected with education, their instructors would see that they attended to those objects, and not to the pleasures of the metropolis. But after all, reprehensible as many of its amusements are, New-York is *not* a Golgotha, although the report might to many, perhaps even against the intention of the committee, convey that amiable idea.

In the second paragraph, the location near New-York is objected to, because it "is situated at an extreme part of the state." But it may be asked, is not this an advantage, when we look at the land and water conveyances which centre in the metropolis? But "the soil and climate differ somewhat from a large portion of the state, where farming constitutes the main business." By which the report perhaps means, that near New-York there is a little more sand in the soil, and one's fingers are not so apt to be frozen on Christmas, as elsewhere! But if the honorable committee are in earnest, we answer, the farm is not the only thing which we propose to establish; there is a college also. Now the location near New-York would combine the greatest number of advantages for the college and farm, *theory and practice combined.**

The third paragraph objects to "the call for the funds of the state in the first instance." Will the committee tell us how the common school system of this state was established? Was it not founded at once by the funds of the state? But this school and farm will be under the control of an Institute. Yes; but that Institute in this matter would be under the supervision of the Legislature; if the Institute neglected its duty, the very terms on which the control of the school and farm was granted to it would be its accusers—condemnation would soon follow.

The fourth paragraph asserts, "the character of the proposed location partakes too much of a local and special nature." *Local!* and *special!* Would not the students of the School and Farm be disseminated over the whole state? And, as a consequence, would not

* Refer to page 508, commencing at "This school," &c.

the whole state participate in the benefits produced by the Institution? Would not the graduates be so many teachers, by precept and example, of the planters throughout the general domain? Is not this college, then, for the "many?" How can any committee twist it into a monopoly for the "few?" Perhaps they call the sun a monopoly of light? How can the school be "limited in a great degree," or in any degree at all, "to the circle of the opulent?" No! no! This school and this farm show upon their faces that they will form a great orb of scientific light and heat, in which every county will bask, the entire state exalt its intelligence, and even the whole Union feel a new impulse towards the acquisition of agricultural information.

But the committee propose a plan of their own. What is it? They would "encourage the study of agriculture in the Normal School and in the Academies and local institutions which are already established and endowed in all parts of the state: we would also encourage its study in our Common Schools." To this it may be replied—the Normal School, Academies, local institutions and Common Schools will have enough to do, if they teach those things *well* which have been already entrusted to them. The committee are, it seems, perfectly aware of the necessity of *practice* with theory, and that such a necessity is the great and unanswerable argument in favor of the School and Farm proposed. How would the committee provide for "*practice*" in *their* plan? They would have the pupils spend the summers upon the farm at home, and under the care of the father or some experienced farmer, where they may put in practice those principles of agricultural chemistry which have been taught. Now, would this be a *simultaneous* combination of practice with theory? This is what we want. We propose a College and Farm combined, where the students can see the true principles of agricultural science, as they appear in the books, or are uttered by the professor, *growing up visibly* in the grain, the tree, the flower and the animal. They can daily test the truth of what they daily read or hear, by the torch of nature. She neither prints nor speaks falsely—she is the voice of God.

We may incidentally mention the good effects that must follow the emulation among several hundred students reading, and listening, and working together. The plan of the committee entirely waives this honorable rivalry; for the father and farmer, if they permitted the son and student to use their farms for application or experiment, would let him have it "all his own way."

But we need not prolong the discussion on this point: a word can settle the whole matter: we know that young men go home to play and not to work; and they are right. The committee may manufacture able sophistry as much as they please; but they cannot remake the human constitution. The Creator has stamped upon it the necessity of recreation.

But one word more as to this report. It says, "It may, and doubtless will, be thought by some, that your committee are too sanguine in their expectations of the success of *their* plan for the great diffusion of agricultural knowledge through the influence of the smaller incorporated institutions of the state." The committee are perfectly right. *They are too sanguine.* Their plan is impracticable. Can it have even a trial. Who ever saw a plan for bringing about new measures adopted and acted on, which was recommended by a committee that reported against the plan proposed by petitioners? The petitioners throw their whole souls and energies into the project. The committee are but the cool, although able and honest opponents, who only exhibit manifestations of a constructive genius while under the excitement of opposition. This is not said in any spirit of hostility. It is simply truth.

So much for this report. It is deeply to be regretted that the ability of the writer had not been displayed in a more worthy cause. Large as are the strides, and splendid as are the triumphs of the spirit of progress in the nineteenth century, she still numbers her enemies by thousands; and these foes will draw aliment from Mr. Beckwith's production. Chinese walls and Chinese hatred to improvement still hold some sway among many of our people. They love and would foster "THE GOOD OLD WAY!" Why, in the meridian-time of "the good old way," ships required months to perform a voyage from Liverpool to New-York; now the winds and tides, held in vassalage by the god-like spirit of progress, waft the vessel from world to world in a single fortnight! By "*the good old way,*" a barque was polled and coaxed from New-York to Albany in twenty days; *now* the superb vessel asks but ten hours to accomplish the same journey! According to "*the good old way,*" a press which could strike off a thousand newspapers in a night was viewed in a light but little removed from the marvellous; *now* a press in the same time hurls from its great iron hands fifty thousand sheets! By "*the good old way,*" nice old ladies, who happened to be blessed with ugliness and black cats, were hung up or drowned as witches;

now, our nice *old* ladies are honored only less than our handsome *young* ladies! By "*the good old way*," monarchs were clad by even Americans in the light of divinity: and *now*, the Yankee

> "Would shake hands with the king upon his throne,
> And think it kindness to his Majesty."

By "*the good old way*," Columbus would slumber an unknown man in an unknown grave. But the spirit of progress pointed his ardent eyes to another world, baptized by another sea, in the far off Hesperides: and that race which is the crown of humanity, now swarm on the fertile soil of that new earth, to chain matter to the car of civilization, illumine mankind with the beams of liberty, and send hoary errors crumbling away in the awful shadow of reform. When you can bind the wing of the eagle with a cobweb; when you can stop the world in its motion by a priestly dictum, then attempt to arrest the giant of progress in his majestic career. He who does attempt it before these labors have been accomplished, must only be crushed himself beneath his mighty feet.

Gentlemen and ladies, this great subject, to which your attention has been called, is still before our legislature. As to reports—one has been made in favor of the School and Farm, another against them; so honors are equal. We believe that the legislature has only to become aware of the importance and necessity of an Agricultural School and Experimental Farm, to found and liberally endow them; for the genius of our legislation has evinced, of late, an unequivocal tendency towards progress.

We all talk about the dignity of labor. Let us show a sense of that dignity, by enlightening labor. Let no one regard this as impracticable. I point the doubtful to that magnificent telescope before us. It is an American production. Mr. Lewenberg, the optician, when he proposed its construction, was told by many that a telescope could not be made in the United States. His answer is here made visible in the 8½ inch aperture, 14 feet focal length, and 1100 highest power. He is now engaged on a telescope of 45 feet focal length, and 21 inch aperture. We will no longer ask Europe to give us an eye with which we can behold the deeds of God in the infinite abyss. America will make her own telescopic vision. *Impracticable!* Determined men but rarely understand the word.

We all know that labor is the true pyramid on which reposes the prosperity of the human race. Let us place in the hands of that

labor a command of the laws of the universe; then her work will be done rationally and effectively.

We all know, that under the old system of education, or rather the no system, there is an immense waste of intellect. Let us, by the adoption of a true system, hoard up, foster and employ that intellect.

We all know that despotic Prussia has commenced a system of Agricultural Schools and Farms; let us show that tyrrany shall not outstrip republican America in the career of science, physical melioration, reform and progress; and that we also can lead the Nile of science throughout the whole length of our Agricultural Egypt.

ADDRESS

During the Twentieth Annual Fair.

By George Gifford, Esq., of New-York.

Ladies and Gentlemen:

As a subject most appropriate for the occasion, I shall ask your attention for a few moments to the American Institute and the influence of its fairs.

I do not propose these topics from any apprehension that the Institute and its exhibitions are esteemed useless, but because, so great is their influence, and so numerous and various the modes in which the wealth and prosperity of the country are affected thereby, that without special attention thereto, none can well understand or duly appreciate them.

The great leading object of the American Institute is to ascertain, expound and illustrate the laws of nature, and to produce therefrom new and useful things for the practical application and use of the human race. This it accomplishes, by the aid of volunteers from the ranks of science and art, and all the departments of industry. Reinforced from such sources, it presses on the search for truth, demolishing the barriers which obstruct the progress of the age, breaking down the enclosures of nature's storehouse, and opening new avenues to apartments hitherto bearing the inscription "no admittance," and letting mankind in to the enjoyment of constant accessions of novelties and wonders.

Aside from the subject of religion, that part of civilized society whose efforts extend beyond their own private affairs, and are directed to things which appertain to general good, may be divided into two classes, as being engaged in two great departments of public enterprise. One of these departments is civil government, or the laws

of men; the other is the natural government of the material world, or the laws of nature. The one is the mere embodiment of the will and wisdom of man, subject to all the vicissitudes and changes incident to unsettled opinion; the other is an embodiment of the will and wisdom of God, as displayed in his works, and is as unalterable as the architecture of the eternal heavens.

Whenever the expanding soul of an individual carries his thoughts and hopes beyond the contracted sphere of mere self, and he begins to realize the high and dignified rank which he holds in the order of created beings—to feel the responsibility which a preception of his relation to God and his creatures involves, and with philanthropic enthusiasm, looks forth in search of a mode of discharging his high duty, he will next be found attaching himself to one or the other of these classes of public benefactors. The champions, of one of these classes, are known as statesmen and jurists; those of the other are known as naturalists and inventors. The former prove the correctness of their opinions by the opinions of others; the latter disclose new facts and verify the truth of them by the production of tangible things. The former propagate theories which may be demolished by a single sweep of the mere opinion of successors; the latter disinter and expose to human understanding hidden parts of the permanent and abiding works of Deity. The former are making and revising a temporary code; the latter are engaged in unfolding the grand, complicated and voluminous code of nature, which, on the day of creation, and for the government thereof, was enacted and ratified by God himself, and which man may use and enjoy, but can never repeal, alter or amend.

Would time permit, a more detailed discussion of the nature and relation, of these two objects, might better show their relative importance, how intimately they are connected with each other, and to what extent, civil and political institutions should be rendered subservient to the encouragement of inventive genius, and to foster and advance the arts and sciences. But as our limited time will be required for other purposes, I will barely say, as illustrative of that point, that political and civil institutions had their origin in the propensity of mankind to do *wrong*. The chief object, therefore, of these institutions was to *restrain positive* evil, and to serve as a mere external protection to orderly citizens, while they might be variously engaged in advancing the work of genuine and positive improvements, by means otherwise independent of civil institutions.

The inquiry of the makers and ministers of the civil law is, what can be done better to restrain offenders and leave the innocent untouched? while the inquiry of the enterprising naturalist is, what can be done to more effectually open new avenues to the grand and inexhaustible storehouse of nature, and to draw therefrom, for the common benefit of all, additional supplies of the positive comforts and conveniences of life? The former are merely holding back the desolating Juggernaut of evil; while the latter, thus protected, are rolling on the car of substantial improvement, and filling the land with plenty.

But, notwithstanding the original object of political and civil institutions was to restrain, and not to produce; to prevent the encroachments of evil, that good might advance by other agencies, it has, nevertheless, often varied from this, and assumed various other aspects. Sometimes, and in some countries, there has evidently been too much governing; the reins of government having been drawn with so much rigor as to restrain and prohibit the advance of good, as well as evil. In such instances the government may or may not be a benefit according to the proportion prohibited of each. Sometimes, authority has fallen into such vicious hands, and government has become so perverted, as to advance evil and restrain good; in such cases it is oppressive, worse than anarchy, and a curse instead of a blessing to mankind. At other times, it has been rendered instrumental, not only in suppressing evil, but also in advancing good, and promoting the prosperity of the country by positive means; not only in arresting and removing the obstruction of evil, that the way might be clear for the progress of improvement, but also by lending the positive aid of its gigantic arm, to speed it onward.

This last is the highest benefit derived from social compacts, and this is the professed character of the civil and political institutions under which we live. Patent laws, literature funds, common school systems, and many other like provisions, are illustrations in point.

How, then, it may now be asked, can government, or the public in carrying out that object, best aid in advancing science and the useful arts? Here I submit that the most economical and effectual mode in which this can be done, is to extend encouragement to societies and associations of citizens, disconnected from political institutions, and formed for the express purpose of doing, in those departments, what is admitted to be for the common benefit and for public

interest. In such associations will be found a concentration of appropriate talent for the work, and pride and pleasure in carrying it on.

This is the acknowledged character of the American Institute. It has been tried, and not found wanting. For nearly a quarter of a century, it has formed the great national vanguard of the pioneers of substantial and practical improvements, in all the useful occupations and employments of life. The works of its scientific, mechanical and agricultural crops, have continually gone forth to enrich and beautify the land, and multiply and scatter the comforts of life, until its influence is now felt from the most densely populated Atlantic shores to the western limit of civilization. Its multiplying lights, beaming up in the western hemisphere, have caught the view of the Old World, whose champions, in agriculture and mechanism, visit the American Institute to learn the means of permanent advancement, and the way to national wealth and power. Why, then, should it not be, what it is fast becoming, the pride of the nation?

The public, seeing the permanent and abiding character of its works, its indifference to sects, creeds and parties, the self-sacrificing enthusiasm with which its pioneers press on the enterprise, and that its achievements are for the common benefit of the country, have gradually become impressed with a sense of its importanee, and yielded co-operation, until its members and coadjutors are now composed of all parties, sects and denominations, without distinction of creeds or political sentiment, and until it now stands entirely above and secure from, all convulsions of political contests, not dependent upon the success of one party or another, resting alike upon Democrats and Whigs, all equally willing and anxious to form the pillars of its support, while it operates in a different sphere, and extends its exploring vision far beyond the arena of party measures or political action, penetrates the mysterious works of God in the government of the material world, and draws down permanent accessions to the common stock of human enjoyment.

Its works are the production of things by new results in the operation of natural laws, and being thus a part of creation, must therefore remain through all future ages, each accession forming a link in that grand chain of improvement, extending down from the commencement of civilization, and only to terminate with the end of time.

Who, then, can avoid feelings of self-gratulation, on being engaged in such an enterprise? and who will not long delight to cherish the warmest emotions of gratitude, for those veteran patriots who gave birth to the American Institute, protected its infancy, and have guided its destiny, until, yielding to the demands of age, one after another, they retire from the field of service, leaving the care of its maturity to other hands.

I have said, that the leading object of the American Institute, is to develop the laws of nature, and enrich the country by the production of new things of practical benefit and importance. I now add, that this object it accomplishes, chiefly, by stimulating, aiding and encouraging inventive genius. And what is inventive genius? Were I to undertake to define it, I should style it *the celebrated lock picker of Nature's secret archives*, the unseen but active agent of reform, the moving power of improvement, which has conducted the car of civilization from the first ages of the world down to the nineteenth century, and is destined to drive it onward for centuries yet to come.

And that characteristic or function of mind, called inventive genius, is not confined in its action to the mechanic arts; it is equally the instrument of wealth, power and prosperity, in all other departments of industry. It has displayed its wonders alike in fields of agriculture and gardens of luxuries, in the frame and organization of systems of government and jurisprudence, in constitutions and civil codes, in surmounting barriers to the progress of advancing civilization, in commerce, literature and science. In each and all of these departments, has the hand of inventive genius reared its proud monuments, forever to stand, in bold attestation of its might and power. It is the great and only instrumentality of developing the resources of a country; its revolutionary power is constantly changing the aspect, not of a country only, but of the world.

We scarcely observe the progress of this ceaseless change, because so gradual, that before becoming accustomed to the use of the new, the old is forgotten, and promises of still better absorb the attention and lead it forward.

Where once, and even within the experience of some of our still surviving citizens, was seen the shivering lad on horseback, with his bag of corn, trudging slowly onward to the distant mill, is now the iron horse of genius, with its long trail of ladened cars, rushing

onward through hills and rocks, and over rivers and valleys, with power and speed surpassing all muscular effort, and hurling vast burdens of the surplus treasures of a western soil to supply the wants of crowded cities. Where once was heard, from fall till spring, the spinning wheel of the lowly, emaciated maiden, is now the deafening buzz of ten thousand spindles. Where once the clumsy craft of olden times, for want of wind and tide, lay floating at random on navigable waters, comes booming now the majestic steamer, with the speed and power of a hurricane. Where once stood, the frail shanty of logs and mud, through the open joints of which was heard, by night and by day, Æolian music of the sporting wind, stands now the magnificent mansion, with its gas and its Croton, and all their enviable accompaniments. Where once the messenger and the post-man, with exhausted steed, were bearing despatches through mud and storm, is now the triumphant car of lightning, mounted upon its highway of wire, and flying between distant cities with the instantaneousness of thought. Inventive genius is the chief power which breaks up and changes national manners and customs. And this it accomplishes, by the introduction of new modes and means of performing all the necessaries of life. It seizes the natural habiliments of brutes, when no longer useful to them, and the web of the worm, the bark of the flax-stalk, and the bed of the cotton seed, and working them into innumerable varieties of hues and forms, presents the grand display of textures which ornament and protect mankind.

Inventive genius speaks, and forth issues, continually, new articles of food and raiment, new modes and methods, new means of travel and transportation, new everything, which appertains to national prosperity and individual comfort. And with such rapidity do these changes go on, that every succeeding generation looks back with astonishment at the apparent stupidity of their predecessors.

Would you see, in striking contrast, the condition of a country with and without the fruits of inventive genius, seek some position from which, at a glance, you can catch a view of its wonderful works; commence, if you please, by glancing at the grand display within this hall; ascend, then, the towering spire of Trinity Church; embrace thence, in a single view, the abode of more than three hundred thousand souls, with all its complicated fixtures and appendages; fountains gratefully playing in public squares, intelligence flying through the air with the speed of light; the endless variety of vessels plying to and from this great centre of commerce; sloops, barges and canal boats, filled with choicest provision, multiform towing

craft, hauling hither and yon their huge burdens, and the vigilant steamer going out to greet and tender its hospitalities to the weary and heavy ladened ship, on her return from a foreign land. Go further, embark in one of our capacious floating castles for the city of refinement; mount there the towering monument, erected in commemoration of the scenes of Bunker Hill; view thence the hundred and three passenger trains of cars plying daily to and from that city; see that group of laboring locomotives, as they return from their long journey, with a trail of cars half a mile in length, and all ladened with the rich products of the distant west; observe with what dispatch their contents are transferred to the huge vessel lying in readiness at the dock to receive them, and how soon upon the wings of the wind, she is borne far away upon the heaving bosom of the ocean. Pass up to Lowell, that city of art; behold there the grand strife between steam and water, in their trial of ability as moving power; stand at the entrance, and look through one of their capacious machine apartments, metal yielding to metal, one machine curiously making another, and presenting together a mass of movements, as devious and confounding to the observer, as the restless foliage of an aspen forest, and yet every motion in exact accordance with the plan of the genius which produced it.

For the contrast with the observation of this tour, penetrate the wilds of a western wilderness; scan the habitation of untaught savages, where no rattle of machinery, whistle of engines, or splashing of steamers is heard, and where inventive genius has not scattered its mills, railroads, printing presses, and its other agencies of civilization, and where man and beast alike, feed upon the spontaneous productions of the earth; and returning, you can the better realize what inventive genius has done, and be prepared to anticipate what it still may do. For there is still room, its march will be onward.

Some doubt this. In view of the wonders already wrought, they fear the secrets of nature are well nigh exhausted, and startle at the idea of going further. What can you next do? say they. You have already pressed the elements into service, and compelled them to perform your labor; contracted oceans and brought the opposite shores of the Atlantic within twelve days of each other; you have presumed to arrest the lofty flight of the proud wind, entangled it in your machinery, and compelled it to lug round your gigantic wheels; you have imprisoned caloric in your steam chambers, and then applied its angry efforts to escape to the moving of your huge engines; you have pointed your tubes to the heavens, and protracted your vision, until

it has penetrated the firmament and scrutinized its structure ; and, finally, you have enslaved the lightning and dispatched it, as a servant, with your messages. What more, then, can you expect? Surely the limit must be at hand. Such doubting ones, to remove their fears and see room for progress still, have only to think of the immeasurable distance between God and man, and that power to create, is infinite with the Creator; or to remember those mathematical lines, which may forever approach each other without meeting; or the endless divisibility of a particle of matter ; or to look into the phenomena and laws of nature, and they will be ready to exclaim : wonderful indeed are the works of man, but those of God are past finding out.

I have said that the American Institute promotes the great and primary intererests of the country, by encouraging research, and eliciting the efforts of inventive genius. The means by which it accomplishes this end are many. I will barely notice its exhibitions, as one of them.

Have you, ladies and gentlemen, or any of you, ever considered the amount of mind and thought engaged in the production of articles preparatory to one of these exhibitions; the deep study and anxious investigations carried on for that purpose, and the thrilling emotion of delight felt in anticipation of preference? It should be remembered that the articles seen at these fairs, numerous and various as they are, indicate but a small part of the efforts of genius actually produced by their influence. Preparatory to one of these exhibitions, are engaged thousands, nay, tens of thousands of the best geniuses and most devoted students in all the various branches of the useful arts, and these, too, acting under the strongest incentives which can be brought to bear upon them, and striving, by the use of all they know, or can glean from others, and to the very extent of their ability, to produce something which shall secure the award of preference.

Owners and employers, by the superiority of the products of their fields, factories and shops, compete for premiums, and through them, for the patronage of the public, while their journeymen and apprentices are no less intent, through the exercise of their skill, to gratify and aid their employers in the attainment of their object, and thereby bring themselves into notice and secure, among other things, an advance of wages. These objects of ambition, glowing in anticipation, arouse their energies, nerve their arms, and lead them on from ex-

periment to experiment, over difficulty after difficulty, through disappointment and discouragement, which all adventurers in pursuit of novelty must encounter, until a discovery is made, a manufacture or machine produced, and exposed in the fair to the view of its hundred thousand visitors.

And besides these, are to be remembered the large number, who, after all their efforts, having failed to complete their specimens according to intention, are not represented here, but whose detached discoveries, nevertheless, go to enrich their several departments of the useful arts, and are afterwards brought together and combined by themselves or others for important purposes. Also, are to be remembered the many, the importance of whose discoveries, made in preparing for the fair, so far exceed expectation, and promise to be of so great consequence, that to secure the protection of law, they elect to complete them in secret.

What animating, powerful stimulants, then, are these exhibitions; and what a restless force of the most searching intellect do they put in motion upon the useful arts? But this is not all. After this mighty rally of the intellectual energies of an enterprising people, preparatory to one of these exhibitions, and this capacious receptacle is again filled with the productions of their skill, its influence is not yet exhausted; they are still to receive additional impulse and energy, from the invigorating showers of public approbation which the occasion affords. Hither they all come—the master, journeyman and apprentice—to witness the grand tournament of geniuses, the great trial of inventive strength, and, like the knights of chivalry, to receive new impulse from the approving smiles of fair ladies.

Hither resorts the wealthy proprietor, with specimens from his establishment, to receive the compliments of an admiring multitude; hither, too, comes the obscure but ingenious laborer, to have his ambition aroused and self-respect enlarged by the just commendation conferred upon the workmanship of his hands. Little does that visitor suspect, as he passes an article, in his meanderings through the Fair, and incidentally drops a word of admiration upon its beauty or workmanship, that standing near, anxiously watching every attention given thereto, is the youthful artisan whose work it is; and that such passing remark, falling upon the combustible spirits of youth, may arouse energies and fire a soul to live long, in the fame of its productions, when the beauties of this hall and this audience shall have been forgotten.

Who can tell the amount of pride and exultation felt by exhibitors within this hall? Who can tell the amount of laudable ambition engendered by the complimentary observations of the multitudes gathering here? Who can tell the renovating power of these exhibitions upon public opinion?

I have seen the halls of diversion filled with the buoyant and gay; I have seen the political rostrum thronged with gazing thousands, and have heard them disperse with plaudits of approbation and marks of enthusiasm; but when, on the close of the Fair, I behold the condensed masses of competitors surrounding the premium stand, and with upturned heads and anxious looks listening for hours to the awards of merit, and then, with transports of victorious triumph, quietly disperse over this wide extended country, and return to their several homes, there to receive the congratulations of friends and fellow-citizens, and to impart to them a thirst for the honors which they have so nobly won, I yield the preference to this occasion, and behold in it the elements of national greatness, and the appropriate work of patriots and philanthropists.

These Fairs are the grand Exchange of the ingenious and enterprising operatives of the country; here they are brought together, and here is an interchange of sentiment by thousands of the ingenious who otherwise would never have met; here they can examine each other's articles, and impart and receive suggestions; here they can mingle the achievements of each for the benefit of all; and here are novelties from each department of industry, and spectators, too, from the same departments, qualified to scrutinize and appreciate them. Here are many treasures in the principles of machines, the process of manufacture, and the growth of vegetables, of great value and of the highest interest to those understanding them; but which the careless or hurried glance of the visitor never detects, and which he never appreciates. Visitors at these Fairs frequently mistake the general appearance of the exhibition for the same articles which have been before exhibited, and every year the remark is made by some, that the Fair is about the same as it was the preceding year, not much alteration, &c., as if sameness consisted in repeating the exhibition of cloths, silks, machines and agricultural implements.

It should be borne in mind, that there may be cloth, but of a different manufacture; there may be machines and agricultural implements of the same kind, but much improved; and there may be vegetables the same in collective appearance, but not in quality or

mode of cultivation; distinctions which constitute their value, and form the particular feature for exhibition, but which those do not make who judge only from a slight glance at the general appearance of the collection; and distinctions, too, which often cannot be made without a particular acquaintance with the articles and the departments of the arts to which they belong. Many novelties appear on these occasions in small things, which, in their existing form, are mere curiosities, and of no practical utility, but which, when subjected to the eye of the ingenious artisan, may suggest modes of surmounting difficulties in something important which he has in progress, and by which he will be enabled to readily accomplish an important purpose which he had before long and unsuccessfully labored to attain. It is by gathering up detached novelties, adding to them, and therefrom devising new combinations and applications, that the greatest results are attained.

The greatest inventions are not the products of one mind; they are the concentrated results of the arduous investigations of many; and few, very few, I regret to say, whose labors have most contributed to such final result, have ever partaken of its honors. Their merit, long after them, has formed the garb of fame for some fortunate successor, who, commencing the investigation where they left it, and using the materials thus furnished, has been enabled with such assistance to attain an immortalizing object.

The locomotive is not the creature of one mind, but of thousands.

From the first recognition of the expansive power of caloric, experiments were carried on and followed up, by one after another, until the detached discoveries in the parts resulted in the combination of that trophy of genius.

Our articles of apparel are each the result of innumerable processes, and each process is the result of many inventions.

In the progress of inventions, those once important in themselves, afterwards become mere ingredients or elements in those of greater consequence. One uses the superstructure of others as a base to erect his own upon, and is himself preparing only a foundation for the starting point of successors.

Such, then, is the mode and means of progress in new things, wherein each succeeding proposition, which science would demonstrate in theory, is illustrated in practice. And from observing this,

it will appear how important a new invention, which in its present form is a mere curiosity, may become when used as a part of some other combination.

But usual and expected brevity, on these occasions, reminds me that I must close. I will do so, by adding a few words on Agriculture.

The importance of agriculture, as a leading employment of man, has been sung by poets, proclaimed by orators, and is acknowledged by all.

When the harvest is abundant, manufactures may increase, commerce flourish, and the country prosper. But, for a single season, let Heaven frown upon the earth, withdrawing its rains and its sunshine, and all is arrested; machinery motionless, vessels moored, genius suppressed, and the distortions of want and despair fill the places of departed plenty and gladness.

It is to be supposed, that a thing so indispensable to the existence as well as enjoyment of mankind, as the cultivation of the earth, would have received their first attention. But, on the contrary, in looking on the works of man, it will be found to have been strangely neglected. Great and successful efforts have been made in devising ingenious implements for working the soil, and machinery for appropriating its products, but among the large body of the farmers of this country, comparatively little has been done to improve the kind and quantity of these products; nor can this stagnation be ascribed to any deficiency in the developments of science. Science has shone forth with peculiar lustre upon the pathway of the farmer, but he has heeded it not. A prevailing prejudice, propagated and handed down from one to another, and to which he has adhered with as much tenacity as to a choice relic of a distinguished sire, has bound him hand and foot.

The idea has been entertained, that any one can be a farmer; that a farmer is a mere spontaneous production; and that from instinct alone, and without the aid of science, he can perform all that is necessary in that employment, and that his success depends, not upon his skill, but entirely on the amount of physical labor he bestows. Hence it has been the practice, that when a man of ingenuity and fond of research, or a youth of promise, and ambitious of distinction, has appeared in the ranks of farmers, his attention has

been immediately turned from the field of agriculture to some other, and, as has been erroneously supposed, more favorable department for the exercise of his faculties.

When a farmer has discovered in one of his sons a taste for knowledge and an inclination to study, he has set him apart for one of the professions. When he has detected in another, manifestations of his genius in the construction of curious things, he has designated him for an artisan; the residue, he has said, were stupid fellows, would never make any thing of consequence, and were good for nothing but to work on a farm. This of course has led the youthful aspirants to despise the occupation of their father, and to really feel that it was an employment unworthy their talent, and requiring nothing but the exercise of muscular power.

Such mistakes and false notions have entered so much into the elements of public opinion on this subject, that to them may be ascribed much of that well-known reluctance of farmers to adopt new things, or to make their business a matter of study or scientific investigation.

To find the origin of such prejudices and erroneous notions, is to do much towards removing them; such origin appears to me to be chiefly this: that farmers are usually brought up under circumstances where, from youth, they gradually and by insensible progress become familiar with the usual routine of farming; and never having regarded it as a matter of study, or as requiring science or any thing but physical labor, they appear to be unconscious that any thing more than the mere use of implements has been learned, or is to be learned about it.

Those who continued in that employment, soon become attached to their old forms and usages, and guarding them with a jealous eye, delight in being able to look back and say that they have not departed from the ways of their fathers. They recognize no means of increase other than an increase of toil, and a labor-saving machine, for a long time, is treated by them with suspicion, as being an instrument of idleness and for the encouragement of laziness.

Now, the first thing to be done, to improve the condition of agriculture, is to remove this load of prejudice, which obscures the understanding and darkens the pathway of those on whom it hangs. Until this be done, the effect of other means must be chiefly lost.

But who can devise any means to effect this object equal to the great Fairs of the American Institute?

These Fairs not only operate directly upon individuals, but are also raising up children, bone of their bone and flesh of their flesh, and sending them forth to do the work of their parents. Their lineal descendants having already spread over the whole country, their children being known as State Fairs, their grandchildren as County Fairs, and their great-grandchildren as village Horticultural Fairs; all of which are now actively and systematically at work in aid of their ancestors.

Any one can therefore see, that by such an influence, improvements are not only tendered to, but absolutely forced into, every district and town of the country. How powerful, upon the agricultural interest of the country, is the influence of the recent practice of entering farms for competition at the Fairs, to test their general condition, arrangement and management; or, in other words, to determine who is the best farmer. What a spirit of pride and enterprise does it beget in the various neighborhoods of the competitors.

Notice the perfect operation of this system. The farmers of a county strive for preference at a County Fair. The victorious competitors, then elated with success, next appear on the battle ground of the State Fair, and victory here encourages them to prepare for the contest of the great Fair of the American Institute.

But to complete the system for improving the art of agriculture, and causing it to keep pace with the intelligence of the times, an important and indispensable adjunct, to the means now in use, is evidently still wanting. As the prejudice hanging about it is gradually dispersed, it becomes necessary that scientific facts connected with the cultivation of the earth should be settled, known and used. To accomplish this, some means is required whereby the principles of science can be applied to the actual practical operations of farming, so as to determine, with the greatest possible accuracy, the best means of producing certain results, and so that the same may be classified and reduced to a system, commanding general confidence and for general use. The truth of this, perhaps, will not be controverted in theory, however much it may be disregarded in practice.

Evidence of such a demand must have long been too abundant to the observing citizen to leave him in the least doubt. The enlight-

ened and successful cultivation of the earth is, and must be, founded on the use of known facts, and it consists in the production of *results*, in the operation of natural laws, guided and modified by the condition under which they take effect. These *conditions* it is the province of the farmer to supervise and direct, and consequently the *results* produced are under his control. How obvious it is then, that to succeed, he must use the proper *means* to attain the desired *results*, and that if he fail in the former he must fail also in the latter. In determining the best means of producing the desired results in agriculture, they are first pointed out or suggested by science, and then proved by experiment; after which, when sufficiently known and authenticated, they become reduced to general practice.

The main question then is, how shall such discoveries be made, experiments carried on, and principles settled? How shall the learning, vigilant attention, hard labor, and many fixtures and preparations, requisite for conducting the long and nice experiments of testing the principles of science in practical agriculture, be sufficiently brought together in joint and continued operation?

The answer to this is, by the establishment of an experimental or model *farm*, under the direction of proper persons, and to be kept as the agricultural laboratory of the nation, to settle and circulate facts, principles and rules, commanding general confidence and guiding the farmer throughout the country. Who cannot see the importance of the use of accurate rules in agriculture? Who cannot see the nice and critical part which farmers perform in their daily labor? Nature is governed by the most exact rules and rigid laws, in the part she performs in the production of vegetation. Why, then, should not those who control the conditions of the exercise of her functions, be equally governed by rules? And how obvious it is, that unless they are so governed, instead of co-operating with, they must frequently counteract natural laws, and expend their toil, only to reap disappointment and vexation.

The chemist and physician, in mixing ingredients, attend to quantity and condition, and are governed by the most exact rules. Why, then, should not the farmer do likewise, in the various and delicate organic compounds which he seeks to produce? His processes equally involve the principles of science under all their various modifications. Air, earth and water are the rough materials from which, through the agency of light and heat, are wrought all the varieties of the vegetable kingdom. From these come all the varied shades and

hues of the beautiful colors which spring up from beneath the hand of the gardener; from these come the ever changing fragrance and odors which laden the summer breeze; and from these are formed the luxuriant fruits of fertilized fields and ripened orchards.

The business of the tiller of the soil is, by the use of proper agents and the aid of natural laws, to decompose these three gross materials, and from their component parts to form the endless varieties of compounds which appear in the vegetable kingdom. Is it not evident, therefore, that to do this most advantageously, we must be governed by rules which conform to the natural laws? But by whom, where and how, are such rules to be formed? It cannot be done by each farmer for himself. He has neither means, time, nor the necessary qualifications for conducting all the requisite experiments; nor is he singular in this, for the settlement of rules by each individual for himself has never been done in any department where exact rules are used. I therefore submit, that there is no conceivable way of so successfully accomplishing this end, as by the use of an experimental farm, under the direction of those whose scientific attainments qualify them for the duty.

But where should such a farm be located? This is a question often asked. The answer to it obviously is, that to be of most service and to exert the greatest influence, such a farm should be situated, at some place commanding the greatest advantages to facilitate its operations; such as a variety of soil, access to other scientific institutions, information, suggestions, specimens, supplies, &c., and where the largest number of persons are habitually brought together for other purposes, and could therefore most conveniently visit it. Such a place, evidently, is the vicinity of the city of New York, as commanding every required advantage, and being more convenient for visitation than any other location.

Let such a farm be established here, and it will soon become the choicest jewel of the country, and be visited by pilgrims from every direction, resorting hither to consult the oracles of nature, as there revealed in her works. Crude suggestions and imperfect discoveries would constantly flow to it, while settled facts and rules, systematized and adapted to the use and understanding of all, would as constantly issue from it to all parts of the country, bearing with them authority sufficient to penetrate the most calloused prejudice, and to secure general confidence and consequent practical use and application. And thus the desired object would be attained, the means for

improving the noble art of Agriculture rendered complete and effective, and the country honored, by another laudable effort of a free people, to use the advantages with which God has entrusted them, to elevate and improve the condition of the human race.

ANNIVERSARY ADDRESS,

During the Twentieth Annual Fair.

BY FLETCHER WEBSTER, ESQ., BOSTON, MASS.

MR. PRESIDENT AND GENTLEMEN:

It is not without diffidence that I appear before you. I stand in the presence of practical men, to address them on practical subjects. I see before me gentlemen, who are either manufacturers, or mechanics, or merchants, or agriculturists, or men of science, each one of whom has vastly more knowledge, general and detailed, than I can possibly have, on all the branches of his particular pursuit or profession; and it is on these pursuits and professions, and their relations, that I am expected to speak.

Nor are those whom I have the honor to address on such subjects, mere followers, contentedly plodding on in a beaten route, to whom there may be an opportunity of communicating some startling intelligence; but, on the contrary, whatever intense thought, acute perception, inventive genius, and enlightened observation can compass, is daily applied by them to the improvement, and extension, and elevation of their various professions, and with how much success, let not only what we have here seen, but let our daily experience declare.

Each wonderful machine which the mechanic constructs or the manufacturer uses, is an improvement, either in nicety of execution, celerity of motion, economy of expense, or increase of power over former constructions. Each new ship which plows the vexed ocean, is, in model, or arrangement, or apparel, superior to its predecessors, deemed almost perfect.

Each field and garden, by enlightened cultivation, is made to yield, year after year, more generous harvests.

It is to those who are chiefly instrumental in producing these improvements, to those who have given the impulse, and still continue to urge on and lead forward; it is to the fellow citizens of the lamented Buel, to the associates and pupils of Tallmadge, that it is my duty to speak.

Anniversaries are usually held to commemorate some former event, some occurrence gone by, on which history has set its seal, and which we must contemplate as it is, unchanging and unchangeable; a great fact, towering up in the distant past, which no man can alter, or conceal, or question.

We commemorate the great deed by which we became freemen; we commemorate the no less important event of the landing of the persecuted Pilgrims on the unknown and silent forest shores of this great continent. Such things as these are usually the subjects of annual or other celebration. But this occasion is not of that nature. We do not meet to gaze in admiration and gratitude on the great actions of others; to recall to our minds the fixed events of the historic past. This is an anniversary of PROGRESS—an anniversary of motion, not of rest.

You are moving—you are pursuing a glorious but difficult and ascending path; pushing farther and higher towards brilliant results; each hour securing some, and confident that others still grander, but now quite beyond the reach of sight, are yet to be attained. At stated intervals you halt and turn to view the advance you have made, the difficulties you have overcome, the points you have reached and passed; and then, with renewed courage and hopeful zeal, you resume your never-ending course. You have no pilot, no guide to cry out to you, "Italiam!" "Italiam!" Your journey's end, your "Italy" recedes as you advance.

Long, long may you continue upon your bright way, bearing high the appropriate banner of "Excelsior," scattering good things all around as you proceed, and leading on continually to better and greater!

This Society was founded for the purpose of "encouraging and promoting domestic industry in this State and the United States, in

Agriculture, Commerce, Manufactures and the Arts." These being the grand objects and interests of the Society, it is upon some, or one of these, of course, that I shall be expected to address you. Gentlemen of most eminent ability, whom, with unequal step, I follow, have preceded me, and have thrown the light of knowledge and the grace of eloquence upon each of these themes, and were they not in their nature inexhaustible, it would be useless and fatiguing to attempt to add a word. But these are subjects never trite—themes never dull. The earth and nature present daily new springing objects of admiration; art and science offer hourly new inventions to our wondering eyes.

In the order in which the various great pursuits of the Society are stated in the announcement of its purposes, agriculture stands first, and deservedly so. I shall, therefore, with your permission, avail myself of this precedence, and seize upon the largest and widest field of thought, where there is room and range enough for all, and where the small may safely wander with the great.

Especially, perhaps, may it be appropriate to turn our minds particularly to this subject at this time, since we have so recently heard and seen evidences of the effect of a want of that which agriculture supplies.

We have seen a great part of the civilized world convulsed, society shaken, commerce and exchanges deranged, credit destroyed, great commercial houses, whose dealings were with nations and sovereigns, whose engagements affected the rise and fall of dynasties, and whose business extended over three quarters of the globe, plunged suddenly into ruin; we have heard the cries of thousands and thousands perishing of famine, and we see multitudes of those who have fled from destruction, filling our streets, and almost content, even in their misery, to have so well escaped from overhanging death; and our people and government have been called on to forget all distinctions of nationality and political organization, and to remember only a common humanity and a common origin, and give charities, such in amount and such in the manner of their bestowal, as the world never saw before; and all this, because a little plant, which some two hundred years since our continent lent to the old world, had ceased there for awhile to flourish.'

Fortunate indeed we are in our land and our position! Doubly fortunate that no calamity, such as pressed on Europe, weighed upon

us, and that we are able to relieve and sustain those whom it threatened to destroy; and still more fortunate that we did not leave the opportunity of such well doing unimproved.

When other things shall be forgotten, when this government and people shall have passed away, when our language shall live only on monuments, the charity of America to Ireland will be remembered. If nations, like individuals, are held responsible for their deeds before the Great Tribunal, may it be remembered of us, that while with one hand armed we shed the blood of wretched Mexico, an unworthy foe, with the other we fed famishing Ireland.

Imagine a fine city crowning the green shores of a beautiful bay. The day is clear and fine; its towers and spires glitter in the light; the waters that roll beneath its walls, rippled by a pleasant western wind, dance sparkling in the sun. All nature is smiling and gay; the golden sky, the glittering city, the green shores, the bright waters, combine in one glorious landscape of unequaled beauty. Seen from afar, how surpassing fair it is! Happy the inhabitants of such a region!

But approach and see! While all inanimate is thus brilliant and beautiful, and land, and sea, and sky in smiling concert seem to promise all that earth can give of pleasure and content, the shining city and the verdant shore are filled and covered with thousands of human beings dying of hunger. What a fearful contrast to the quiet loveliness of nature does this misery of the living present! Under the influence of this dreadful distress all ties of relationship and friendship are forgotten. Families separate to roam singly in useless search for food, or lie down to die together in groups. Men gaze wildly on each other when they meet, and filled with horrible thoughts turn to look back as they pass. Fathers, perishing themselves, hear with a feeling of relief, the faint complaints of those nearest and dearest grow fainter till they are hushed for ever. Mothers see without regret the heaving bosom that expires the last sigh of their little treasures.

Disease, the inevitable attendant of famine, is also doing its fearful work. The air is heavy with foul and poisonous vapors.

There they lie in scores and heaps, the living mixed with the dead. All hope has long since gone. Some complain, some struggle, but most are given up to dull and sullen despair.

One group has straggled in an idle wandering to the shore, and looks in listless gaze upon the swelling ocean; without object, without expectation. As they look, a little speck appears in the far horizon over the sea. It comes gradually nearer, and rises clearer to the view. It is a sail, perhaps of some fishing boat, or some small merchant vessel on its busy way in pursuit of gain.

Nearer and nearer it comes, urged rapidly onward by the favoring breeze. It stands for the land Stately and steady it sweeps into the bay, its swelling canvass dazzling bright in the sunlight. The great proportions and the pierced sides proclaim a ship of war. Her sails are furled, and gracefully she rides to her anchor. What brings her there?

The colors that wave from her peak have more than once floated triumphant over the "battle and the wreck" in deadly opposition to the "meteor flag of England." Surely it can now have no dangerous purpose; the calamities of war are not to be added to those of famine. Or can this be a visit of idle ceremony, or untimely curiosity?

But what tumult agitates the city? What sight draws that hurrying multitude of wasted forms to the waterside? What shout rings in the ears of the dying?

That gallant ship has come on no idle or hostile errand. No crowds of armed men press her decks. Her magazines of war and implements of death are all left behind. She comes laden down till she labors, with a freight of life and help.

From her sides that once were black with cannon, threatening destruction, there now pours, in an unceasing flow, a golden stream of life-giving grain. It is this which has covered the shores, the beaches and headlands with anxious, earnest crowds, who hardly believe the strange sight to be real, as they gaze upon this food, to them unknown, and almost miraculously brought.

On hearing of this, the dying revive again and struggle into life; nature borrows strength from hope; the news rings through the city; the shouts awake from the dream of death those who had lain down to try the last slumber; they drag themselves forward; the pale mother snatches up her children, arouses her despairing neighbors, and rushes to gaze upon the food she trusts so soon to bestow on her little ones, and to taste herself. Agony and despair are put to flight;

a new hope kindles in each breast; the extravagance of joy succeeds the gloomy silence of utter misery. Help is at hand. Another hour and the worst is over. They shall eat and live and shall not die.

It may be, though Heaven avert it, that we shall have wars, by land and by sea. Naval battles and triumphs may again be ours, our ships of war may again ride victors over the ocean; but none of them, though their torn sails and battered hulls bear witness to a hundred successful contests, shall attain the renown with which mercy and charity have crowned the JAMESTOWN and the MACEDONIAN.

But quite apart from any accidental interest which recent events have given to agriculture, it is always a subject of the highest importance, the farthest extending relations. Its nature is grand. It is connected with the sublimest of sciences; it necessarily leads to the sublimest thoughts—"from Nature up to Nature's God."

The grass and the fruits, the harvest and the flowers, though man is indeed instrumental in their production, yet depend on causes so far beyond his control, are due to influences infinite and divine, that they seem always to be the direct gifts of Heaven. The ever-returning seasons, each bringing its peculiar blessings and delights, and above all the joyous spring, when again the earth turns towards the sun, are each and all new miracles. Who can say when in the autumn our planet turns away from the great centre of light and life, and with speed inconceivable travels off through space, infinitely cold and dark, that we shall ever stop in our course, and not rush unchecked on our cheerless way to "cold obstruction" and eternal night? Who can predict that the hand of Heaven may not omit or forbear to direct us again towards warmth and being? And when, at the proper time, we find ourselves not forgotten among the infinity of worlds, and the dissolving ice and snow, and slow appearing green assure us of his continued protection, what a cause of renewed gratitude and admiration it should be and is.

That more often recurring instance of divine bounty, the morning, which none so often see in all its beauty and glory as the agriculturist, is equally glorious and equally calculated to fill the mind and heart with the sublimest contemplations and most religious and exalted thoughts. With what pleasure do we hail the morning in health! With what longing do we hail it in sickness!

To the young and the gay, the happy and the healthful, morning cannot come too soon to light them to their enjoyments: to the poor and the careworn, to the sick and the sorrowing, to the sailor tempest-driven, and the landsman troubled, hope comes with the morning.

One who appreciates Nature in all her glorious works, has said of the morning—

"It is morning, and a morning sweet, fresh and delightful. Everybody knows the *morning*, in its metaphysical sense, as applied to many objects and on so many occasions. The health, strength and beauty of early years lead us to call that period the 'morning of life.' Of a lovely young woman we say, she is 'bright as the morning;' and no one doubts why Lucifer was called 'son of the morning.' But the morning itself, few people, inhabitants of cities, know any thing about. Among all our good people, not one in a thousand sees the sun rise once a year. They know nothing of the 'morning.' Their idea of it is, that it is that part of the day which comes along after a cup of coffee and a beefsteak, or a piece of toast. With them, 'morning' is not a new issuing of light, a new bursting forth of the sun, a new waking up of all that has life from a sort of temporary death, to behold again the works of God, the heavens and the earth, it is only part of the domestic day, belonging to breakfast, to reading the newspapers, answering notes, sending the children to school, and giving orders for dinner.

"The first faint streak of light, the earliest *purpling* of the east, which the lark springs up to meet, and the deeper and deeper coloring into orange, and red, until, at length, 'the glorious sun is seen, regent of day,' this they never enjoy, for they never see.

"Beautiful descriptions of the 'morning,' abound in all languages, but they are the strongest, perhaps, in those of the East, where the sun is often an object of worship. King David speaks of taking to himself 'the wings of the morning.' This is highly poetical and beautiful. The 'wings of the morning' are the beams of the rising sun. Rays of light are wings. It is thus said that the Sun of Righteousness shall arise, 'with healing in his wings;' a rising sun which shall scatter light, and *health*, and joy throughout the universe. Milton has fine descriptions of the morning, but not so many as Shakspeare.

"I never thought that Adam had much advantage of us from having seen the world while it was new. The manifestations of the power of God, like his mercies, are 'new every *morning*, and fresh every moment. We see as fine risings of the sun as ever Adam saw, and its risings are as much a miracle now as they were in his day, and I think a good deal more, because it is now a part of the miracle that for thousands and thousands of years he has come to his appointed time, without the variation of a millionth part of a second. Adam could not tell how this might be.

"I know the morning. I am acquainted with it, and I love it. I love it fresh and sweet as it is, a daily new creation breaking forth and calling all that have life and breath and being, to new adoration, new enjoyments, and new gratitude."

The contemplation of the works of man, of his inventions, that seem almost creations, inventions that annihilate space, enable him to outstrip the light in speed, to defy the winds and waves, and conquer the elements, that give him strength at will, that make the forked lightnings his minister; all these give us occasion for well-founded pride and exultation. We rejoice in men, in ourselves and our capacities; but when we regard the fields and the harvests, the seed and the grain, the clouds and the rain, we remember their Almighty author, compared with whose works, how little, how feeble, and how silly are our best contrivances and most astonishing inventions, and we rejoice and exult in the display of the wonders of infinite skill and immeasurable power.

In endeavoring to speak of agriculture, I must be general in my remarks, confining myself chiefly to its political and social relations. Of practical agriculture he can know little who does not himself cultivate the ground; if not with his own hands, yet under his constant supervision. I am not like the patriarchs of old, or Dandie Dinmont, "cunning in that which belongeth to flocks and herds," and this assembly is a place for most of us to attend with a view of learning, and not teaching.

One of the first indications of civilization is the advancement and improvement of agriculture; and all histories show that the more refined a people become, the more skilful is their cultivation.

In all the great empires of the old world, in the East, in China and India, Babylon and Rome, the science of agriculture was carried

to the highest pitch in the days of their glory, that their knowledge of the arts and sciences allowed. The gardens of Lucullus and Lysander, and the hanging gardens of Babylon, bear witness to this. With us in our day it has become a science, a study, a pursuit of the best educated, the most distinguished, the most patriotic in all civilized countries. It is no longer a mere custom of scratching ignorantly the surface of the earth, and depositing a few grains; it is no more a rude and unenlightened occupation for boors and peasants. It makes all other sciences tributary, and all the discoveries of chemistry, and geology, and mechanics, are pressed into its service. It is coming, very properly, to be considered as *the* science first to be perfected.

In all old and thickly settled countries, where the demand presses hard on the supply, the invention and energies of statesmen are employed to keep before the want of food. The day is probably far distant when we shall ever be so densely populated as to feel this sort of pressure, but it will eventually come, and then not even the exuberant and inexhaustible prairies of Illinois, and the fathomless alluvion of the valley of the Mississippi can more than supply our wants. We may learn from China how this may be. China, larger than we, with all our territory, though we include all that which our government seems to demand of Mexico, and with a soil in all respects as rich as ours—her great rivers, Hoang-ho and Kiang-hu, watering valleys as long and fertile as that of the Mississippi, and the great plains of her Northwestern regions, bearing grain like our great Northwest, and her southern provinces raising rice on every inch of tillable soil—China finds it difficult, from all this territory, and by all the untiring and skilful agricultural industry of her people, to feed her millions,

So important do these sagacious people think it to promote agriculture, that the greatest national celebration they have is an agricultural one, on which the Brother of the Sun and Moon, as they term their monarch, reverently scratches a furrow on the face of his mother Earth, holding the plow with his own hand, and attended by all his chief dignitaries.

There is not an inch, I might say, of arable land in all China not cultivated; is there a patch anywhere, among barren rocks, a little dell among sandy hills, a strip that can be reclaimed from some morass, it is seized on by the economical Chinese, and made to bear food for man. Some writer gives an almost incredible account—incredi-

ble to those who have not seen Chinese industry, and patience, and economy—of their care in cultivation.

He says "there is hardly a spot of earth which their skill and industry does not force to produce something. Where rice will not grow, they raise the sweet potato, or else it is sugar cane, or strawberries, or cotton-wood trees, or tallow trees, or laurels—at least, even on the sandiest spots, they rear a stinted pine, which yields a little wood and a little turpentine. The pains which the agriculturist takes to preserve his crop exceeds belief. If he fears the wind may shake the grain from his ripening rice, he collects several stalks in a bunch, ties them together, and thus makes them render each other a mutual support. He does the same to protect, in exposed places, his sugar cane, and entwines the leaves of those stalks which form the outside or circumference of the bunch."

He well knows, too, the value of manure, and nothing that will decay, or can be made to enrich the soil, is lost. Even the barbers carefully save all the beard and hair which they crop from faces and heads, and dispose of it as manure, to the Chinese farmer. What a mine of wealth he would discover in the bearded Apollos of our cities!

But with all this care and all this extent of territory, the demand for food exceeds the supply. The only article which China, unsocial and independent in all other respects, is forced to import, is rice, and of this the government annually stores great supplies, which it distributes in seasons of scarcity.

We may perhaps, also, take a lesson from China in other things than agriculture. China has been able, for years that no man can number, to live almost wholly independent of the rest of the world. She has been able to do this, because from her great extent of territory, under one strong central government, such, by the way, as is necessary to hold together a very extended realm, she could supply nearly all her own necessities of physical sustenance, and because she early learned the doctrines of protection to home industry, whether agricultural, mechanical or manufacturing.

It will be long, as I said, before we shall reach the over-peopled condition of China, but in all probability we shall in time, and may we be wise in time, and give to agriculture all that attention and all that protection and encouragement which may be necessary to advance it to its highest perfection.

A distinguished citizen of Massachusetts has recently presented to Harvard College a donation of unequaled munificence, for the purpose of establishing a school of practical science. I trust it may not be long before there shall be established, somewhere in our country, a school of practical agricultural instruction,—a school which shall afford the farmer that advantage which almost all others enjoy, and that is the opportunity of learning by the experience of others, of being taught in a thorough and enlightened manner the great principles and scientific truths, as well as practiced in the details of his occupation. May I venture to add what the place and the occasion suggest, that when such an institute shall be created, it will be looked for not far from this, the great capital of the new world.

It need not be said that no nation can be independent which relies on foreign supplies for food. Let us for a moment contemplate the greatest empire, I believe I may say, that the world has ever seen, the British. Its power has been described by those capable of describing great things, and we all know it, how great it is; those worlds which Alexander sighed for, have owned its sway; language can hardly exaggerate its greatness—continents are its provinces—and yet with all this might and dominion, with all its fleets and armies, all its Indies, East and West, its islands and its fortresses, commanding so many seas, how near its heart is a disease which always threatens its existence. Suppose the late famine in Ireland and Scotland had occurred during a time of war. What is valor, what warlike skill and power, what all collections of destructives against a foe like famine? Not all the cannon of England could force supplies of food from other lands, nor all her bayonets prevent that result, which has so often proved the ruin of great states—domestic commotion.

It is a conviction of this necessity of a home supply of food, under all circumstances, which occasions such attention to be given to the subject of agriculture, both in England and on the continent of Europe. Modified by political and social circumstances, all Europe is striving by agricultural improvement to reach a common result.

The two leading countries, England and France, are trying two great experiments in the production of food; both having in view the same object, but seeking it by means wholly diverse.

In England the great body of the land is held in a few hands and in large quantities; in France it is divided up into almost infinitesi-

mal divisions. It may be doubted whether either is quite right, and whether they have not run into too great extremes on each side.

Land held in masses by great landlords has a tendency to debase and degrade the tillers of the soil, who are not owners; divided too much, it tends to make all poor alike; to prevent altogether the rearing of cattle and horses, and to cause a great waste of land, cut up by roads and paths.

In some countries, where this subdivision of land has been practiced a great deal longer than in France, a most extraordinary custom has arisen, which is intended to prevent the too absurd division of lands, which otherwise would be cut up into farms of a foot square. I allude to the custom of what is called Polyandrism, practised in the Island of Ceylon, and in some provinces of India, which is the opposite of polygamy; for, instead of one husband having several wives, one wife has several husbands.

Three brothers, for instance, who inherit from their father a farm, already reduced to Lilliputian dimensions, in the place of each one taking a wife to himself, and again subdividing the little patrimony among his own offspring, all marry the same woman, and bequeath the estate undivided to their common family.

I believe that we, more nearly than either England or France, approach the true condition, in which, as a general rule, there are neither great landlords nor very small farms. I do not now speak of cultivation in the southern parts of our country—for there, I believe, experience has shown, that as far as profitable cultivation is concerned, large estates are far the most successful—but of our farming in the northern and middle States. I refer to what is usually called farming, and not to what is elsewhere usually called planting—to farmers, not planters.

It has been supposed, that in general, cultivation would be more perfect while land was held in large parcels, and by wealthy individuals, since more would be, and could be expended in improvements and experiments; and certainly the cultivation of England goes to show that such may be the case; but certain things are necessary to bring about a very high degree of success in such a system, the objections to which, as it seems to me, far more than counterbalance any advantages to be derived from it.

In the first place, as I before remarked, when the tillers of the soil are mere hard-worked day laborers, with no interest in the land, and no hope of any, a very great and most valuable portion of the community becomes degraded, and, as we should think, disfranchised, deprived of that equality, that manhood, which all of us can boast; and such must be the condition of the many, if the few are to hold the lands; then, to insure success in this system, labor must be very cheap, ill paid, and abundant, seeking rather than sought for, and there must be a great demand for food, and a scant supply, or such expensive improvements could not profitably be made.

Nor, as I believe, are particular expensive improvements of certain great estates of much general value or public benefit; in so far as they make "two blades of grass grow where one grew before," it is well; but then, as examples, they cannot well be followed, since various estates differ in situation and locality and capacity, and what may be done on one may not on another. It is the discovery of something generally useful, something capable of application to the great mass of lands, that is really desirable and valuable, and these discoveries on small estates by men of moderate wealth as by the great. Of what consequence is it to the public, that some morass on some great estate has been filled up, or water brought to some barren hill, compared with the discovery, that seaweed, or marl, or electricity, are good manures for all lands.

With us lands are divided into farms, neither very large nor very small. We have no very great estates in single hands; but each one cultivates his own land, which is a portion large enough for all his wants, and usually well divided into different uses. The few great tracts which belong, at present, to a few great proprietors in this State, are hardly exceptions to the general rule.

These were manorial grants before the Revolution, and some of them still continue in the possession of the descendants of the original owners; but how long does it require, since our former colonial laws of primogeniture and entail are all abolished, to reduce these possessions to the same platform with all the others? The ordinary course of nature, and the quiet operation of our laws, will, without any further interference, soon divide these great holdings into as small tracts as it is desirable to parcel out agricultural estates.

With this general, rational and natural division of lands, which our laws neither unfairly hold together, like those of England, nor

inconveniently subdivide like those of France, we certainly exhibit a country generally well and skilfully cultivated, though not strained to its utmost capacity; and we have no want of enlightened and liberal men, who make agriculture a study, and devote their time and their means in experiments and investigations to its advancement and improvement. Indeed, we may safely say, that if the generality were as ready to adopt successful inventions and use fortunate discoveries as the more spirited and enlightened among us are to make them, there would be seen a great improvement still in our fields and farms.

But prejudices have to be met and overcome; the experimentalist, a name almost as ill received, and as unjustly so too, as that of the speculator, is sneered at by many, and coldly and distrustingly received by most; he is looked upon as reformers usually are. He startles us, disturbs our self-content and complacency, and seems to urge us to an inconvenient acceleration of progress. If, after much labor and expense, he succeeds in any of his attempts at the discovery or invention of improvements, they are adopted with much reluctance, and his example followed with great delay. Of this almost every one's experience will furnish some instance, and my own very limited knowledge affords one, perhaps not out of place.

In a part of this country, near the sea, where the land is sandy, and dry, and poor, there is, among many other similar, a farm on which the owner raises a little stinted crop, growing out of pebbly hills, dotted here and there with small black spots of manure, that itself needs manuring. A neighbor of his, a little more inventive, and not quite contented with the parsimonious gifts of the needy soil, by applying seaweed and fish, which the generous ocean furnishes in great abundance, manages with little expense to make his crops flourish green and strong. The individual first referred to, was asked one day why he did not imitate his neighbor, and avail himself of the supplies to which his position gave him ready access, and apply fish or kelp to his sand hills? His answer was, that he thought, on the whole, that kelp was a hot, forcing thing, that did not last, and that fish poisoned the land. And I suppose that at about this time of the year he is gathering his crop of fifteen or twenty busnels of corn to the acre, while some of his neighbors have "forced" and "poisoned" their lands with seaweed and fish, into bearing seventy or eighty.

[Am. Inst.] KK

We have experimentalists enough, as many as England or France, who are ready to expend their means liberally for others' benefit as well as their own. The great want is, to induce neighbors to follow their example, and adopt their improvements.

The mind of the farmer is eminently conservative and slow to change. He hesitates to make any alteration in the mode of culture which he has practiced for years, and which he learned of his father; and there is certainly good reason in his case for great caution in making experiments. Others may experiment and invent machines and contrivances in iron, and wood, and brass, and if they fail in rendering them useful, their various parts may serve other purposes, the material is still capable of immediate change and new application, and without loss of time; but the farmer, if he finds in the fall that his experiment of the spring has been unsuccessful, must wait through a long year to repair his loss.

And, indeed, as farmers learn caution and wariness in this respect, so they practice it in most others. Those who have had any occasion to observe such things will agree that political opinions, among others, are much more tenaciously adhered to and unwillingly relinquished in the country than in the city. Those who live in great communities and masses, whose avocations lead them to continual association with others, are more impulsive, ambitious and alert. The farmer, on the other hand, is rather contemplative, distrustful, and attached to old things. With him *via trita* is eminently *via tuta*. It is just and natural, and desirable that this should be so, in some degree. The sudden rush of excited multitudes doubtless needs some check, and this is found, with us, in the steady, deliberate and cautious body of the agriculturists.

But if it may not be assumed, and cannot be shown by reasoning and argument, that our condition and institutions, which provide neither for very large nor very small, but for moderate estates, are best adapted to the improvement and elevation of agriculture, to the great object of raising good farmers and good men, as well as good crops, it cannot be denied, that owing to some causes, our country is extremely fortunate in those respects; and if such laws and institutions are not the chief promoters of these results, as most of us believe, at least they appear to offer no hindrance to their attainment.

The agriculturists of America have a great future before them. It is pretty certain, that for a great number of years, nothing but

providential events, such as most unheard of dearth and famine, can prevent their having yearly a large surplus of produce to dispose of; and it is probable that Great Britian, if not France, must be their consumers to a great extent. It is very clear, that some of the most valuable American agricultural products which have lately, under the so called "free trade" system of England, found their way into that country, are not likely to be again kept out by a rebuilding of the former barricades against them.

It occurs to me, as I pronounce the words "free trade," what a difference the same phrase has in different places and times.

We hear of free trade in our country as well as in England, at the present time.

In these times and in England, it means free trade in corn and protection to manufactures;—for it is a fact too well known to be disputed, that this English *free trade* is a measure forced from the great landowners by the manufacturers, with Mr. Cobden at their head. It is not, to be sure, to protect English manufactures against foregn competition, for that they do not fear any more than our agriculturists fear it in their breadstuffs and provisions, but to protect them against the rapacity of the landed interest of England.

It is protection to English manufactures, such as English manufactures happen to need, and if they had required any other sort of protection in reason, it would have been obtained, such as British interests of every sort, agricultural, commercial, manufacturing and national, are always sure to receive form a government alive to British interests, and knowing how to preserve them and advance them, and generally not particularly modest in taking care of their own.

In the present condition of the two countries in regard to the relations between capital and labor, free trade in England is exactly the same thing in its results, as protection in the United States.

In both cases the thing protected is *labor*, which is cheaper than ours; in England it is protected, not against foreign labor, against which it needs no protection, but against *capital* vested in land. In both cases the object is identical, to wit, the securing to labor of remunerating wages, because, whether wages be remunerating, depends, not wholly on the nominal amount, but essentially on the

price of food. A less rate of wages may be sufficiently remunerating if food is made cheaper.

If Mr. Cobden were now in our councils he would, according to his own recent delarations, be a supporter of the tariff of 1842. In this he shows the distinction which a clear mind is capable of making, and that he can discern differences in things, though they bear the same name, and resemblances in things, though they are classed under different heads.

A tariff man of the United States is to his country what a free trade man in Great Britain is to his, A FRIEND TO THE LABOR OF HIS FELLOW CITIZENS.

With us free trade means an abandoment of all provision by the supreme power for the welfare of the several great interests of the country, leaving each to struggle as it may, single-handed and unsupported, against every competitor from all other countries, and as much indebted for protection and fostering care to our own government as was Robinson Crusoe to his, when planting grain and catching goats on his desert island.

The farmers of the United States, more than any other class, hold in their hands the great interests of the country; they *outnumber* all the rest, and to them, their intelligence, their honesty, their liberality and their patriotism, we must look in all emergencies, for the support of the government and the protection of the great interests of all. On the farmers, who compose the great mass of the people, we rely for the maintenance of good government, free principles, and correct political opinions, for the preservation of morality and the laws; and to them we look, in the last resort, for the defence of the land to which they are attached.

It may be well expected, that, as a soil always kindly, if not everywhere extremely rich, a climate most propitious, and institutions of government of his own making and own choice, bless the agriculturist, and insure him from all danger, protect him so that he need fear nothing for himself, he will be ready, while th'us fortunate and secure, to aid in protecting those classes of his fellow-citizens who need protection, against those dangers, whatever they may be, that threaten their interests and prosperity, whether those dangers come from without or within.

Agriculture, as I have before said, and as we all know, is the basis of every thing. We begin by getting something to eat; when that is accomplished we are ready to look about and see what remains to be done.

All manufactures and commerce rest on agriculture; rice, cotton, coffee, tea, sugar, breadstuffs and provisions, load far the greater part of the uncounted keels that track the waters of the globe; all arts and trades depend upon successful agriculture.

But still, while all this is true of it, agriculture is much indebted to the arts and to commerce, to manufactures and to science, for the distribution and consumption of its products, for its development, and encouragement, and elevation, as the pedestal of a statue is indebted for its value and its honor to the beautiful proportions which rest upon it.

While other arts would not be at all without agriculture, without other arts, agriculture would be dull, barbarous and unfinished—a great base supporting nothing.

It will, I suppose, be admitted on all hands, that merely agricultural countries are necessarily always poor and in a great degree dependant.

Of the thousand examples that rise before us of this truth, we might take the provinces of the Ukraine of Russia, so rich wheat-bearing regions, and contrast them with rugged Scotland; or, near home, let us see what comparison unfortunate or wretched Mexico bears with ourselves.

She is agricultural merely—her mines occupy but a very small part of her population, and the rest are farmers or herdsmen. With a climate and soil much readier to yield than ours, and with eight millions of population, allowing all we can to bad government, what is the reason that Mexico is so very poor, with all her gold, except that she *makes nothing for herself*, and buys every thing. Great bridle-bits and spurs, lassos and ponchos, are pretty much the sum of Mexican manufactures; and of commerce! how many Mexican merchant vessels traverse the seas?

Does Mexico even make muskets and ammunition to defend herself? Has all Mexico a foundry that will cast an iron ball?

Our gallant soldiers die of wounds that gangrene from copper shot.

And Mexico is so poor, and her government is so poor, that there is no doubt, the destruction of human life out of the question, that this present war is one of the best things, the most profitable things that ever ocurred to her. In the first place, since, according to the rules of modern chivalrous warfare, we pay for all supplies furnished our armies, we bring to the farmer's door wherever they go, a home market for all he has to spare, for which he is paid in specie, and doubtless at a very remunerating price. And, secondly, as we blockade all their ports, so that no foreign importations can be made, we keep in the country all the money that would otherwise be sent out to pay for these imported foreign manufactures; and, if we keep up the war sometime longer, we shall probably hear of manufactories springing up in Mexico, from the necessity of the case.

Why has not Mexico canals, and rail-roads, and ships, and docks, crowded and flourishing cities, and a smiling country, and well paid, well fed, well clad inhabitants?

The answer suggests itself to every one's mind. She has no arts, no commerce, no manufactures; no nothing to buy, and use, and consume, and cause a demand and furnish a customer for her agricultural productions; this is why she is poor and weak, more so than when Cortes marched to her chief city; and her lands are owned in great estates by great landlords, with farms that are measured by leagues, and cultivated by those who are hardly better than slaves, because one of the results of a condition merely agricultural, where profits are very small, if they are at all, and land is but cheap, is the acquisition by the wealthy few of all the soil.

How different, Heaven be thanked! is our own condition. Our whole land covered with smiling villages and pleasant farms, and filled with a busy, happy, intelligent and prosperous people.

Would that it might properly be, that in the place of an irruption of armed men, we could invade Mexico with commerce and manufactures—with arts instead of arms! Raise her condition, elevate her people, and make her worth a conquest, if conquered she must be.

The great difference between her and us is caused, not merely by our differing races and different institutions of government, but mainly

by the fact that we have had wisdom and foresight enough to protect in some degree, the home industry of the country, and purchase from our own people those things which Mexico has to look for from abroad.

While the earnings of the Mexican, who ventures to buy a manufactured article, go to fill the pockets, or improve the land, or decorate the country seat of some foreign resident, without any return to him, the expenditure of their surplus by our farmers, goes to the benefit of some fellow countrymen, who in his turn becomes a customer and purchaser of theirs. In this way we help one another—we elevate and enrich our country—we become sufficient for ourselves—we grow independent and commanding,

> "Whole as the marble, founded as the rock,
> As broad and general as the casing air."

The value of things depends on the labor bestowed on them. The diamond itself, buried in the mine, is valueless; it is in a great degree the labor of finding it, the skill in polishing it, the grace in setting it, which make it so priceless a gem.

How valuable is a grain of wheat in a farmer's stack! It is the taking it out and planting it, the reaping it, the threshing it, the grinding it, the packing it, the transporting it, the making it into bread fit for man's use, which lend its value. The fruitful and benignant Earth, smiled on by favoring Heaven, cannot bestow on man such wealth as he can by his own hand force and wring from the most sterile soil and unaccommodating clime. It is not the natural growth of plants, not the gifts of the soil, however great they may be, which make a people wealthy. Nature nowhere does more for man than in India. All vegetable treasures of the forest and field, all mineral treasures of the mine and of the sea are hers, and yet how poor are her people!—how poor the country itself! A single county of England is actually worth more in money than a whole India province. There is more real wealth and worth in Yorkshire than in the greatest presidency in Bombay.

The products of agriculture lie dead and cold and cumber the ground, until they are seized on by manufacture and commerce. The one manipulates and transforms them into the various fashions best adapted for use, adding a value by every touch, and the other bears them away, by land and sea, and distributes them over the earth.

Mr. President, there have been those who have suggested that there was a difference, if not an opposition of interests between the farmer and the merchant, and mechanic and manufacturer. That these various pursuits rather preyed on, than lived by each other, and that the success and prosperity of the farmer particularly, was incompatible with that of the mechanic or manufacturer, and that protection to home industry was a sacrifice of him to the others.

In a government like ours, sir, and with a people like ours, we need fear no external foe. We have now reached a point of national greatness that enables us, if need be, to meet on equal terms with the proudest and the strongest of the great powers of the earth. But, sir, we have always a danger, always a foe to guard against, most deadly and most insidious. It is unsound public opinion, This is worse than all the rage of foreign hostile nations,—more to be feared than famine or pestilence.

It has been the fortunate destiny of this association to meet and overcome a most dangerous fallacy, that might, perhaps, otherwise have grown into public opinion, that is, the fallacy that agriculture and its interests are injured by the protection of domestic industry.

There are doubtless great objects yet to be accomplished by this body, great ends yet to be reached; but had it done nothing else than this, it had earned an enviable fame, had perfected a great work, and entitled itself to the lasting gratitude of all who are truly anxious for the welfare of their country.

There are triumphs of many kinds—civil triumphs, forensic triumphs, political and party triumphs, and glorious military triumphs, but each of these is often purchased at such cost as mingles some regret with all the rejoicing; "*medio de fonte leporum surgit amari aliquid;*" but a great victory of truth over falsehood, of sound sense over error, is a triumph without alloy, a triumph in which all may join, as fortunate for those who have been overcome as for those who have prevailed. May such be the continued achievements of the American Institute!

ADDRESS

During the Twentieth Annual Fair at the Plowing Match, at Harlem, on the 15th day of October, 1847.

BY H. C. WESTERVELT, ESQ., OF NEW-YORK.

MR. CHAIRMAN, LADIES, AND GENTLEMEN,—

On that bright and beautiful morning far, far back in the calendar of time, when chaos was restored to order, and the heavens and the earth were finished, and man became a living soul, we may fancy that we hear the mandate as it descended from on high—"Let the earth bring forth grass, the herb yielding seed, and the fruit-tree yielding fruit after his kind," and while we recognize man placed in the garden "eastward in Eden, to dress it and to keep it," we may sensibly appreciate the higest perfection of human enjoyment; but when the golden gates of Paradise were closed upon the original transgressors, and man in his fallen nature had incurred the direct vengeance of the Omnipotent in that unalterable decree, "Cursed be the ground for thy sake; in the sweat of thy face shalt thou eat bread all the days of thy life," yet when we look abroad upon the cultivated landscape of the globe, and discover that the greatest happiness of our race claims an association with the improvement of the soil, we are intuitively lead to reflect that much of the severity of the decree has been revoked, and that while much has been awarded to us for our benefit, much for the advancement of our reason, we are stimulated to renew our industry, to awaken our gratitude, to speed the plough, and to think lightly of our burthen.

If it should claim no other consideration, Agriculture is at least venerable for its antiquity; it is co-existent with the dawn of time; it has lasted through the brilliant noon of ages, and it has continued to sustain the husbandman of the vineyard, "since the evening and the morning were the sixth day."

For what, then, are we assembled in these fields to-day? Here we meet the intelligent, the influential; the producer and the consumer; men of business and men of leisure, and withal the enviable practical farmer. We meet as the component parts of civilized society, each having a separate interest to preserve, and all entertaining the desire to promote harmony and fellowship, for the advancement of the general welfare. We meet as the advocates of peace, willing that our swords may be beaten into ploughshares, and that our enemies may receive the staff of life.

It is not then the jubilee of a military conquest, it is not the despotism of sanguinary rulers, nor the fears of famine, nor the attractions of eloquence, nor the revenge of mere brutal passions, which summon us now to the fields; but rather to cherish the emblems of peace and civilization, to drink at the fountain of pure health, to respect the inveterate foes of want and famine, and to lend a helping hand to those silent advocates of American industry and universal happiness—the plough, the spade, and the harrow. And if we find ourselves in musing contemplation of these uncouth misshapen monsters, we must appreciate them as the terrors of savage ignorance, and the foes of poverty and sterility.

It is such a jubilee we this day commemorate; we come to appreciate the first best gifts the ingenuity of man has yet produced, and to promote their use in every arable spot in our boundless country, and to aid in their transmission from generation to generation.

Of the early history of the plough we find no distinct record; it however appears to have been in use among the Egyptians prior to the Christian era. The laws of Moses forbid ploughing with an ox and an ass together. The Romans used two kinds of ploughs, one for strong and the other for light soils; they were constructed with and without mould-boards, with and without coulters and wheels; with broad and narrow pointed shares, with sharp sides and points, and with high raised cutting tops.

In the Greek monuments of antiquity are several examples of wheel ploughs.

A curious picture of a ploughman is found in a work entitled "Saxon Rarities of the Eighth Century." A book of husbandry published by Sir A. Fitzherbert in the time of Henry VII. recommends the farmer's wife to "make clothes for her husband and herself, and she may

have the lookes of the shepe, either to make blankets or coverlets or both; she must also winnowe all manner of cornes, to make malte, to washe and wrynge, to make heye, and in time of need to help her husband to fyll the mucke-wayne, or dounge-cart, to drive the plough, to load heye, corne, and such other, and to go or ryde to the market, to sel butter, cheese, mylke, egges, chekynge, capons, hennes, pygges, gese and all manner of cornes."

Pliny mentions a freedman, who made his vineyard produce crops so much larger than those of his neighbors, that they accused him of witchcraft, and accordingly brought him to trial. When he appeared in the forum, he produced a stout daughter, and some excellent implements, as iron spades, sheares, &c., and in presenting these, together with his oxen, to the Senate, he impressed on the tablets of ages those memorable words—"These, Romans are my charms." He was accordingly acquitted with honor.

In many portions of the globe, in ancient and modern times, we observe that women have held and now hold various positions in the pursuits of Agriculture, and we are happy to observe that the more civilized customs of the United States relieve them entirely from this masculine duty, and properly assigns to them the more congenial arrangements of the household and the fireside; and while British philanthropists are repeatedly reading us homilies on the evils of slavery and bad manners, it may not be generally understood that, in several counties in the north of England, bands of women are found working in the fields under the surveillance of one man.

A celebrated English author, in commenting on this fact, says, "As I cast my eyes for the first time on these female bands in the fields, working under their drivers, I was, before making any inquiries concerning them, irresistibly reminded of the slave-gangs of the West Indies. Turnep-hoeing somehow associated itself strangely in my brain with sugar-cane dressing; but when I heard these women called *bondagers*, the association became tenfold stronger."*

Should this system possess any redeeming traits, it may avoid the guise of slavery; but in this enlightened day, *bondage* sounds like something very nearly allied to it; and although we are far from being an advocate either for the cause or extension of slavery under the sanction of any flag, we have no hesitation in saying that the slaves

* Howitt.

of the United States, in the hands of good masters, who are engaged in tilling the soil, in raising corn, cotton, rice and sugar, are absolutely more free, more intelligent and more happy than the *bondagers* of Great Brittain, or the miserable serfs who pay homage to the caprices of European nobility.

Mahomet Bey, the king of Tunis, was dethroned by his subjects; but having the reputation of the philosopher's stone, he was restored by the Dey of Algiers, upon the promise of communicating the secret to him. Mahomet accepted the proposal, and accordingly sent him a plough, with great pomp and ceremony, intimating that the strength of a nation is her love of Agriculture; that the philosopher's stone may be realized in a good crop, which in its turn may be readily converted into gold.

To a benighted country this secret would prove more essentially valuable than the gems of an entire kingdom; and under any government the knowledge of it is beyond an estimate. The tawdry elegance of a sceptered power would soon tarnish and decay if the plough, the main-stay of its support, should be withdrawn; and the control of empire is of no consideration where the implements of husbandry cannot gladden its solitary territory. The earth itself would prove but a cheerless waste without the enlivening charms of human cultivation; and so palpable is this truth, that every civilized nation, throughout all ages of the world, has its chief advantage in protecting the husbandman, and the products of his toil.

Even the process of manuring, that indispensable aid to the soil, was held in such high esteem by the Romans, that Stercutius was immortalized for the discovery; and although that imperial government owed its luxury and its fame to the culture of the earth, and a due regard for the calling of the husbandman, it was finally by the neglect and contempt of them that she fell and was forsaken. As an equivocal part of her magnificent career, we are informed that when the city and temple of Jerusalem fell into the hands of the Roman power, the Emperor ordered the plough to be passed over the ruins, and the site was for many years after a place of desolation.

"From hence proud cities date their overthrow,
When, insolent in ruins, o'er their walls
The wrathful soldier draws the hostile plough,
That haughty mark of total overthrow."*

*Horace.

But' in its turn, the majesty of Rome has left the earth, and the "hostile plough" has continued to pass over and bury much of her splendid remains, and the proud eagle now builds her lonely nest amid the ruins of her former watch-towers.

A simple commentary on the benighted ignorance which now so universally prevails in Mexico, is exposed in the fact that priestcraft is tolerated at the sacrifice of Agriculture. A recent traveller in that region of country assures us, that but about two years since an iron plough was introduced, but that on being brought before the Inquisition, the wood-work was burned, and the iron thrown into the river.

The agricultural era of Spain was probably during the latter part of the enlightened reign of Ferdinand and Isabella, when "the fertility of her soil, the products of opposite climes, the fruit of her plantations, and the vineyards of her hills," yielded their abundance, not since surpassed in her less glorious history.

It is evident, therefore, that the success of nations is co-extensive with the industry of their population, and that both rely on the bounties of nature as their mutual allies; and when the hunter subdues the ferocity of the beast and extends to them his pastoral care, he perceives that good regulations, however simple, result advantageously to him and his household. The green pasture, the wheat of the valley, and the corn of a thousand hills, afford a sufficient scope for his care and attention, and in looking after these, he learns the more important office of taking care of himself.

It is the fulfilment of trifling circumstances that often impels us forward to the accomplishment of greater ones. We occasionally find certain developments in an untaught mind of an unusual order, which are sometimes the dawn of great results, but which need the full power of judgment and reason to make them perfect.

The woodsman who strikes the first blow of the axe at the root of the tree, to open a clearing, or for some other purpose, feels that his ambition is in a measure compensated when it falls to the earth. He is no less gratified when another and another find their places at his feet, until after repeated industry he perceives himself master of a clearing, which he anticipates may yield him an acceptable crop, and leave room for the primitive log cabin.

It is a fine characteristic of our nature, that we intuitively venerate the early creation of our hands, which fancy may suggest, or ingenuity may supply. We are gratified with it, and we find an attachment towards it almost fraternal; and the original inventor of a principle, however imperfect, will readily recognize our meaning. Such, then, are the feelings of the builder of the first log cabin, which ambition guides him in perfecting and making comfortable, so far as a state of rudeness will permit.

In the course of time, as the products of his industry produce him their reward, man begins to realize that he is the possessor of something more than a primitive habitation, and that the solitary wilds of his chosen seat, (now grown familiar) are gradually wasting away, and a clearing is again opened for the accommodation of a neighbor, when both find it to their comfort to promote their mutual concerns in the advancement of a prospective settlement, and in improving the reason consigned to their keeping.

The practical advantages of agriculture, in course of time, grow familiar, and become a matter of habit and of necessity, and as resources are developed and the love of freedom predominates, abundance springs up throughout the land, and the machinery is put in motion which fills the storehouse with wheat and fine linen.

We are aware that it is comparatively a few years since our country dissolved her allegiance with the government of Great Britain, and first breathed the breath of empire. Since then our progress has been upward and onward. *Excelsior* is proclaimed from the heights of every hill, and the darkness of the savage state has been brought to the light of a luxurious civilization. Our fathers seemed to have waited for the guarantee of freedom, to move with a rushing impetus towards every species of internal and agricultural improvement.

Soon after the contest of the revolution was ended, before the campt-tent had been struck, and the smoke of the battle-field had passed away, we find little Delaware among the first in the States in devoting itself to agricultural interests. As early as the year 1789 she boasted of a district between the Chesapeake and Delaware bays, which yielded the finest wheat in the world. Wheat from Pennsylvania and New-York was condemned as hard and flinty, and it was only by a mixture with the Delaware that it was found at all plantable. Fortunately, however, for the Empire and the Keystone, they did not suffer for good bread, as their citizens were supplied by their

affectionate kinsman, with a superfine article, which was conveyed to them in small trading vessels from the port of Wilmington. While Delaware at that time was scarcely paid for sending her products in small trading vessels to her neighbors, we still see an evidence of her advancement before the other States of the confederacy. Even the Empire State was then in her infancy, and mostly an unexplored territory,—

"The plow of wisdom not yet entering there."

A voyage to Albany was then the perils of a fortnight, and the magnificence of the Hudson and its ample resources were neither realized nor dreamed of. The valley of the Genesee was the wild hunting-ground of the untutored Indian; the rude wigwam still lodged the natives of the soil, and the rapid and gigantic strides of civilization, which have since annihilated the tribes of the Iroquois and the Mohawks, was yet an unbroken silence. When we think of these things, we confess that it is with wonder and admiration that we glance back at the short and rapid career of our own State. Forests have been felled, fields have been opened, cities have been built, learning is universally felt, commerce, manufactures and the arts are widely disseminated, and millions acknowledge the triumphant success of agriculture.

It is but about thirty-five years since the site of the present thriving city of Rochester was a solitary wilderness, and when proposals were then made in the Assembly to raise a small sum by county tax to build a bridge over the Genesee river, it was strongly objected to —one member opposing it on the ground that it was a "God-forsaken place, inhabited by muskrats, and visited only by straggling trappers." It is scarcely requisite to say, that Rochester now ranks with the flourishing cities of the Union, and that the wheat of Genesee is some of the finest in the world.

During the year 1798, the exiled Duke of Orleans (now King of the French) was travelling with his brothers from Buffalo to Canandaigua. On their route they met with Mr. Alexander Baring, (since Lord Ashburton,) who was on his way to Buffalo; when the English traveller informed the Duke, that he had left behind him a savage and almost impassable country; whereupon the Duke repaid the courtesy by assuring his companions that they would find no improvement in the route through which they had yet to pass, and of all the fatiguing adventures of a wandering life, Louis Phillippe describes this as the most difficult and dangerous.

It is not fifty years since this remarkable conversation occurred, yet what a change of truth—how altered, how great, how magnificent the scene! Who can fathom it? Who can realize it? The axe of the pioneer has fallen in silence from his grasp; the wilderness has disappeared before the might of peopled cities, and not only that rich landscape which leaves the line of the Cayuga bridge until it meets at the shores of Lake Ontario, but yet onward, and still beyond, State after State is linked with the destiny of a prosperous country, and the beams of civilization are still spreading to the west, driving before it the wild beasts of the prairie, and making the rough places plain. And if the light of the fire which warmed the native children of the forest is gradually growing dim, the echo of the settler's rifle, and the shrill whistle of the locomotive may be heard as they advance to the shores of the Pacific.

To what, then, is this attributable? To what main-spring of action do we owe it? To commerce and manufactures alone? Not so; although these are balance-wheels in the society of civilized life, it is the farmer who sets them all in motion, and who finally settles the entire reckoning.

The great business of America is agriculture. With honor for its guide, and independence as its conductor, it has been the powerful lever, aided by the administration of wise and generous laws, which has mainly assisted in elevating our country to a rank with the foremost nations of the earth.

But we have already imposed on your indulgence, yet before separating allow me to state—*that we live in a progressive era, and the privilege allotted to mankind for benefiting the soil and rendering it more easy of culture is deserving a more universal notice.*

The American Institute are now asking the attention of farmers to the feasibility of establishing an experimental school in this branch of science, and we leave you to decide how far their efforts are entitled to a favorable hearing. It requires no depth of penetration to observe, that to keep pace with the improvements in steam and electricity, we must endeavor to keep other things quite as indispensable on an equal footing.

The medical virtues of a garden plant or the hidden fruit of a forest tree, by grafting, budding or manuring, must be searched for and brought into use. We are aware that much has been told within the

last few years of the capacities of our fields and orchards; but science, practice, and hard labor are yet able to reveal more; and what we now trample upon as the most noxious of the vegetable kingdom, may with the aid of a little instruction assume the talismanic virtues of a healing balm.

The American Institute are therefore desirous of trying experiments on the capacities of the earth, and they wish the agriculturist, the farmer, and the gardener; the sober, the staid and the reflecting, to offer them their aid; so that when a valuable discovery has been made, we or our successors may know where to find it.

The sun of our prosperity is now in its zenith; let us labor while it gives us light. The delightful season of the bounteous autumn, now passing away, to be succeeded by the chills of winter, reminds us that the reapers have thrust in the sickle, and that the harvest of the earth has been gathered. The period of the farmer's leisure approaches, when the long evenings are open for his reading and instruction; and although we have no assurance that when the "flowers again appear on earth, and the time of the singing of birds shall come," we shall again partake of their fragrance and their harmony, it is still well enough to be ready. The sighing of the winds, as they waft the gorgeous foliage from the parent stem, may be offered as the requiem of neglected opportunity. Let us labor then while it is yet day.

The genius of error is striving to allure us from the pathway of truth, and is threatning to deceive the unwary with her superficial theories, to the sacrfiice of legitimate pursuits. Not content that medicine should remain a science, that proper laws should control society, and that religion should continue a virtue, the quack doctor fattens on the simplicity of his victim, the quack theorist amuses his dupes with juggleries he cannot explain, the fanatic laughs at the folly which gives his absurdities an importance, and whole crops are destroyed by the self-inflated whims of half-fledged farmers.

Fortunately, however, the balance of common sense preponderates and the fancy *isms* and *ites* are watched and wondered at, as the melancholy freaks of human eccentricity.

Neither of the delusive dreams of Millerism, Mesmerism, Mormonism, nor Fourierism, ever afforded any two men an honest living; but

we are sensible that all will agree that the plough and the spade, the earth and its culture, have led myriads of our race from rudeness to reflection, from ignorance to learning, from debility to health, and from famine to fortune.

CLOSING ADDRESS

At the 20th Annual Fair of the American Institute, October 23, 1847.

BY GEN. JAMES TALLMADGE.

Fellow-Citizens:—I meet you with great pleasure on the present occasion—the close of the Twentieth Fair of the American Institute. I am delighted to inform you that this Anniversary has been attended by more persons than have, on any former occasion, visited the Institute. The Judges announce a great improvement in Manufactures and the Mechanic Arts. The List of Premiums awarded, are: Gold Medals, 28: Silver Cups, 44; Silver Medals, 244; Books (volumes,)125; Special Premiums, 11; Diplomas, 402.

There we have the Horticultural Department—with, among other things, 20,000 Dahlias, demanding and deserving attention, illustrating in a beautiful manner the character and utility of the delightful study of Botany. At and before the Christian Era, the Romans could only exhibit 500 varieties of trees and flowers in their botanical list. In the 79th year of our Lord, the whole catalogue was 1,000, as the product of the whole then known world. In 1762, in the days of Linnæus, the catalogue stood at 8,800; showing a vast increase. In 1820, it stood at 56,000—*now* look abroad and see the advance of intelligence; the same department of Industry is swelled to the extent, that the catalogues of our day contain the names of 100,000 varieties!

At the conquest by the Romans, the native Britons possessed no other fruits than the crab, the sloe, the hazel nut, and the acorn.

Cultivation exercises a marked influence on trees and plants; creating new varieties of flowers and fruit, and altering the proper-

ties of many. The Peach, one of the most delicious fruits, is said to be poisonous in the place of its nativity—beyond the Red Sea.

The Carrot and the Parsnip, wild in our meadows, are the same. So, also, is the Rhubarb:—but when cultivated, is the common pie plant of our gardens. The Cabbage—Savoy, Broccoli, and Cauliflower, are supposed to be derived from a plant found on the sea-coast—perhaps the sea-kale.

We require Agricultural instruction, adapted and congenial to our soil and climate. Its rudiments should be introduced into our common schools—teaching at least, the classification of soils, and the treatment and the manures congenial to each division.

English books on Agriculture are our principal sources of instruction. New York is about 41 degrees, while England is situated at 50 to 60 degrees of North latitude. *Their* climate, a considerable portion of the year, is one of rain and fogs. Their soil is clay—adhesive, cold, wet, and sour. Their books direct "*Draining*" to lead off from their soil, or arable lands, the surcharge of water; and the free use of "*Lime* and *Guano*," to impart heat and a vivifying power for vegetable production.

Our climate is arid; our soil is dry loam and sand. A place suited for *draining* is the exception, and not the rule, in this country. During our summer droughts, the fountains are dried up and vegetation burned.

It is hard consolation, at such a crisis, and when his flocks are lowing for drink, to ask the husbandman to read a book on "Draining," and directing the use of "Lime and Guano" (good in their place,) which experiment has shown to be destructive to all vegetation on this dry soil.

All these circumstances illustrate the necessity for Agricutural Schools to extend the education of Botany and Agriculture, with Chemistry, in these departments of Science. I would ask on this occasion for public aid to establish such a School near this city. It is but justice to advance our intelligent farmers in *their* department as far as *other* departments have been advanced. Out of every one hundred people, at least 83 get their living from Agriculture. *They* pay most of the taxes and bear the public burdens; they are, then, worthy to have a school of this kind to teach them their department,

and the Sciences properly connected with it. We need *something:* for too long have we been obliged to look abroad for the necessary life-sustaining products—and this night, I deny the necessity for doing so any longer. We have here, all around, evidence that our country is competent, and that we posess the *abundant ability to supply our own wants.* This room affords ample demonstration.

Here is on exhibition before you, a sample of an "*Hydraulic Ram,*" with the power of a head of water from a common barrel, placed six feet above the floor: this Ram is forcing a stream of water up through a pipe on top of this castle, near thirty feet in height.

The instrument has long been known as a matter of science, but not in coincidence with the climate and soil, it has become almost obsolete in English learning. Claiming to provide at small expense for raising up water, to irrigate Lawns and fields of Table land, the revival of the "Water Ram," and its already extensive spread in this country, are evidence of the public want and the tone of public feeling.

Look at the article of *Iron.* Twenty years ago, it was costly and difficult of manufacture. We looked to importations. Five thousand dollars, then, in domestic productions, have swollen to millions, and the cost is greatly reduced. We feel that our country is able to produce enough: and yet, while American mechanics need employment, we are looking abroad for the manufactures that should come from the labor of our own people!

In *Cutlery*, England has yielded the endeavor to supply us; and now comes here to obtain our patterns and learn from us the perfection of her work.

There is the *Steam-Engine*, too: England acknowledges our supremacy, and Russia knows where she gets the best, and sends to America for her steam-engines, and instructions to make her Railroads. We have here on exhibition a *revolving* Steam-Engine, deemed a great improvement. Again, England knows where she can be best supplied, and comes here for samples of her *Railroad Cars.*

Steam has long been known as a matter of science; but it was the American Fulton who first adapted it to public use, and worked a revolution in the commerce and navigation of the world. It was our Franklin "who called down the lightning from the heavens,"—

it was a Morse who reduced it to the industrial pursuits, and especially allotted it to the task of almost instantaneously heralding the news of the day to the remote parts of our country.

As to *Iron*; we have here [pointing to a model] a machine that draws it out *ready for use*—twisting several bars together, and manufacturing it in a manner which prevents the possibility of the occurrence of those breakings and errors which were formerly much too frequent in railroad iron.

Allow me here to refer to *the new mode of making Iron*, by which we gain another advantage over the old system.

Instead of the open forge, and the fabrication of the metal first into pigs, and then into blooms; we have now on exhibition an improved Furnace, which runs the whole at once into Bloom-iron, and saves nearly half the cost. Why, then, when we can supply our own wants at home, look abroad for that supply?

Here [unsheathing the superb gold-mounted *Sword*, manufactured by Ball, Tompkins, and Black, of this city] is an exquisite specimen of American Industry, given by the city of Troy, at a cost of $1, 250, to the gallant General Wool, as a token of the admiration entertained for his valor by the place of his birth. Although Peace is our motto—Agriculture our object—honor connects with other arts and other sciences, and becomes national property to sustain and aid the Rights of our country; and here, in this Sword, is the illustration of the ability to do it! Our manufacturers can now make the instruments—and Buena Vista as well as Churubusco tell that our citizens know how to use them. (Great applause) It is now fixed beyond controversy, that in nothing are Americans more perfect than in the *material* of valor—and by our late wars the discovery has been made to Europe! (Applause.)

We have a great advantage in *the singular adaptation of our Genius to the wants of the community*. Some time ago, we found military accoutrements were becoming too expensive, and on expressing a desire for some contrivance which should furnish the article of gun-stocks cheaper, a Mr. Blanchard appeared, conned the matter, and forthwith produced a *Turning-Lathe* that now turns a perfect gun-stock, with all its protuberances and inequalities, from a solid piece of wood; and reduces the price of military arms near-

ly one-half. When we wanted lasting portraits of our great Statesmen or other eminent men, Mr. Blanchard again appears, saying: 'Gentlemen give me a plaster cast, and from that pattern *my machine shall turn you a marble bust* of any one you may wish' —and yonder they are; a Clay and a Webster:—the Statesmen of our country! (Applause.)

Here we have an article of *Glass*, showing the skill of our Brooklyn neighbors on this subject. It is the most perfect thing of the kind ever made by us, and contrasts strikingly with the imported material of the same variety, from Europe—*that* came to often yellow and dingy; *this* sparkles like the diamond. It is manufactured from the superior quartz or fine flint-sand found in Vermont and also in Massachusetts, Virginia, and Pennsylvania. Until recently we have had competitors for our premiums in Glass from Pittsburgh, Albany, Boston, and other places still more remote. This sample from the Brooklyn Works is worthy all praise and competition—though, the vantage-ground being gained, and importation stopped by reason of our most excellent productions, competition for premiums here is not continued. Window-glass and all other productions in that fabric are in like condition; domestic production supplies domestic demand.

[The speaker here referred to the article of *Rock Salt*; concerning the positive existence of which in our country much discussion has been held, but to ascertain with accuracy its existence no decisive steps have ever been taken. The question appeared settled, by the exhibition of a specimen of the substance, of 40 lbs. weight, brought overland by Mr. Letson from the so-called, "Jefferson Salt Mountain," in Oregon, between the Rocky and Blue Mountains. It is a level (and not a mountain) of about 50 miles diameter. There were a few thoughts thrown out on the origin, use, and production of the substance.]

It is due to the Institute to say that *there has been a steady progress in the Mechanic Arts.* There are now exhibited 100 or 200 inventions or adaptations, either entirely new or useful additions to others. Here (indicating the direction) see the improvement in *Agricultural Implements:* this Fork you could tie it up, put it in the pocket, treat all manner of ways, and it, as you see, springs back to its right position instantly on being released. We also point you to the Ploughs and other tools, too numerous to admit of detail.

This bust of Gen. Taylor is the production of a lad of 17, who drew the ideas of the countenance simply from a profile portrait. That boy we are proud of; he is an example of the spirit pervading our country, and even this, his first production, would do honor to an artist of years and experience; and illustrates the utility of the development, by these Fairs of American genius. Look at that *Carriage-Harness* from Philadelphia, on my right: look at it attentively, and continue the examination until you are satisfied that Europe cannot surpass it. So, to, this improved *Saddle*

While England is contending for wealth in the field of Commercial enterprise, what is America doing? She is exporting *Ice!* The East and West Indies, with the Southern portion of our own land, claim a share of this pure product of Nature—and many cities in the West Indies, in Europe, and some in Asia, have carts labelled "American Ice." The income the present year, resulting from the trade in Ice alone, is more than the Wine trade of Bordeaux! (Laughter and applause.) And considering the article without capital, and the great number and amount of tonnage of the vessels employed for its shipment, it opens to our country a better and more profitable trade than does the Wine trade to Europe.

Ship-building has been often exhibited, with all the variety afforded by exquisite skill. Having attained the vantage-ground, the repetition of exhibition is omitted. This night, however, a few specimens are before you—illustrating, from the Life Boat of Francis, to the ship-of-war, the power of our Country to equal any other in the scientific and masterly construction of vessels; and the history of our country has hitherto recorded the story that our *naval men*, in peace or in war, know how to use them, when the interest or the honor of their Country shall call them into service. The names of Hull, Decatur, Perry, and their brave compatriots, stand recorded in History as national wealth. While, on the land, a Taylor, a Wool, and their heroic band, and a Scott, a Worth, with their brave companions, march under the banners of their country, we may not doubt that the rights and the honor of this Nation will be defended. (Applause.)

Returning to more peaceful topics. We have here several most exquisite specimens of *Silk*, one of which was manufactured by an American *lady*—Mrs. Pierce of Vermont, that coldest region of all

our country. The piece contains 62 yards—and this is White Amerian Silk, made from cocoons, and *woven in a hand-loom!*—by this lady. Not long since, we sent to France and to India for the same quality of goods. It is congenial to our climate and soil, and should be one of the staples of the country. It needs encouragement.

Such is the ability of our country, which ought to be cherished till its production supplies our demand.

Go to yonder table, and you will find elegant *Cloths*, abundant specimens of which are *here*—and *they* evidence our ability to manufacture the best Broadcloths, and to grow the Wool to do it. Connected with this subject it is proper to state, it had become a matter of desire to *unite cotton with wool*, in its manufacture. It has been attended with difficulties, especially in its unequal shrinking, and receiving different shades of color from the same dye.

Here is a machine to accomplish the object, and remedy all difficulties. It consists of an addition, to the common wool spinning machine, of spools of *cotton* thread and so united that the *wool* runs out and is twisted on the cotton thread as a coating; leaving the cotton invisible, and yet, as is alleged, of increased strength, and making an improved fabric. The Institute points to it now, only as evidence of the power of American Genius, for the ready adaptation of machinery to accomplish any object.

In *Cotton*, our manufactures already supply demand, for domestic use and foreign exportation, and of such superior quality that *England counterfeits our labels* to find a market for her own second-rate productions!

It is then evident that we are fully able to compete with any nation on the habitable globe, and when occasion calls, we can not only hold Fairs for domestic competition, but (even *now*)*compete with Europe herself* in the production of that class of articles which have heretofore been cherished by our Government.

With regard to *Linen*, however, it has *never been protected.* During the War of 1812, several different factories commenced its manufacture, each of which was supplanted and ruined by the foreign importations that followed Peace. It is not now manufactured in our country. England gave a bounty on its export, and in 1816

the duty here was 15 per cent., while the duty on coarse cottons stood at about 83. Flax is congenial to our soil—the farmers do not raise it for want of a market. When raised, its fibre and seed are shipped to Europe. Why shall we not give the boon of this article to Agriculture for the raw material, and to the manufacturers for our own domestic supply? Two years past I have offered a premium of a Gold Medal for a piece of American Linen, but no competitor has yet appeared, and the medal is this night a second time left on hand without a claimant.

Turn for a moment to the *Horticultural Department*. Yonder are its varied and beautiful specimens before you. A lady of Brooklyn contributes twenty such elegant bouquets as this [exhibiting a most beautiful one] as a token of our advance in that department, and of her high approbation of the Institute.

Here also are the specimens of Agriculture, comprising the most delicious fruits and vegetables, with its other varied productions, and all of mammoth size. Among them, is a cheese of 600 lbs. weight, and ten feet circumference, which has been tested with great satisfaction by the Judges—and of a quality which prevents the further importation of English cheese. Flora's gift of thousands of Dahlia-blooms I have before mentioned; Pomona you see surrounded with Apples in 60 varieties; Pears in fifty; Grapes in twenty; besides Peaches, Plums, Quinces, and other fruits of the season—in all, above 200 varieties. Ceres, the goddess of the fields, has represented the farm and the dairy with an abundance of her richest productions.

In this state of the advancing mechanic prosperity of our country, may we not cast a look at the scenes around us? England stands the centre of commercial wealth and of the commercial world: and this she owes to her just system of taking care of the Labor of her own country, She has pushed her Industry, in the shape of Manufactures, into every country in the world, either savage or civilised. She has thus secured employment, wealth, and prosperity to all the departments and divisions of her subjects. She has a balance of trade, from her Commerce, due her annually, against almost every nation of the world; and for which she can draw a bill of exchange, at premium, upon any one of them, and upon every one of them at profit. These balances of her trade are represented in the public

prints, to amount to abont 300 millions of dollars per annum. The premiums on bills of exchange, to bring home these balances—other than the profits on her shipments—are equal to the whole amount of the ordinary expenses of the American Government. This illustrates strongly the effect of, and the distinction in, the con. dition between a creditor and a debtor country. To keep things in this condition for the last thirty years, England has practiced encouragement and protection to the Labor and Productions of her own country—while she has loudly proclaimed and preached Free Trade to other nations; which she kept thereby in the condition of debtor countries.

Free Trade never has, it never can exist, under any state of society: it is an *ignis fatuus* to delude and ruin. What would the honest farmers of our land say to the man who should propose *free pasturage* over their fertile fields? Would they not arrest and care for him as a being incapable of self-preservation? Can the laws of Society be overthrown, the rights of property be abolished, and our citizens attempt to live in common! It is madness to discuss such themes.

"Equality in trade and equality in rights," is the motto for the American People. "Taxation without the right of Representation," was the principle and the cause of the American Revolution. We surrender it all, if, with all our Agricultural and Commercial enterprise, we servilely submit perpetually to stand as the debtor country—enduring the sacrifices of the transmission (at our expense) of the balances of trade to another country! Allow me to ask—before the late destitution in Europe occasioned our breadstuffs to be received—how much it would have cost a farmer of Ohio or any State to pay a £1000 bond due from him to a creditor at London? As England had hitherto refused to take American Breadstuffs, his only mode of payment was by the transmission of specie, or by the purchase of a bill of exchange. The price of specie and the premium on bills bear a usual proportion to each other. To ship specie requires a premium on its purchase, expense of shipment, insurance, agencies, commissions, interest on the time of transmission, and, therefore, it is apparent that he must make large additions to the £1000 collected, in order to pay the £1000, subject to all these deductions, at London. If he buys a bill to make a transmission, besides its being subject to the hazard of bankruptcies, the now

market-price is 9½ per cent. premium at 60 days—and if *at sight*, besides the hazard of non-payment in these days of insolvency, it is 10½ per cent. In 1837, soon after the suspension of specie payments by our Banks, Exchange on London advanced to twenty-two per cent. premium; and the price of specie arose to fourteen per cent. These sums, however, include the nominal rate of Exchange, while the actual sacrifice to the debtor country, though variable is generally about equivalent to the premium on specie, and the costs of transmission.*

*The annexed Table will show the prices of Bills of Exchange on London at 60 days sight, also the premium on Spanish Dollars in the New York market, on the 1st of January and the first of July in each year, from 1836 to 1847 inclusive; by which it will be seen that any person who might have preferred remitting in specie to risking Bills of Exchange, would have been subject to premiums averaging from 3 to 5 per cent.; the Spanish Dollars so remitted being subject also to charges for freight, time, insurance, &c., equal, at the present time, to 1 1-2 per cent. in addition. Before the introduction of steamers these charges were equal to 2 1-2 or 3 per cent.—besides incurring the risk of the occasional fluctuation in the price of these Spanish Dollars in the London market; it being a well known fact that the price there of this kind of specie has been frequently below their par in this country. Thus, to remit in specie to London from New York, for the last ten or twelve years, cannot be estimated at a cost less than 5 to 8 per cent., or so much sacrifice to the dealer in this country.

With regard to the *Par of Exchange*, we quote McCulloch:—"The *par* of the currency of any two countries means, among merchants, the equivalency of a certain amount of the currency of the one in the currency of the other, *supposing the currencies of both to be of the precise weight and purity fixed by their respective mints.*" Thus, it is apparent, that in Exchange between two countries, the nominal and real values must always be computed.

Rates of Exchange on London, and prices of Spanish Dollars, in the New York market, for a series of years—Bills of Exchange on London being drawn at 60 days sight.

Dates.	Exchange on London.	Spanish Dollars.
Jan. 1, 1836	8 1-2 per cent. prem.	3 per cent. prem.
July 1, "	7 1-2 "	3 1-2 "
Jan 1, 1837	8 "	4 "
July 1, "	22 "	14 "
Jan. 1, 1838	10 1-2 "	5 "
July 1, "	8 "	3 "
Jan. 1, 1839	9 1-2 "	5 "
July 1, "	9 "	4 "
Jan. 1, 1840	8 "	5 "
July 1, "	7 1-2 "	2 "
Jan. 1, 1841	8 1-2 "	6 "
July 1 "	8 "	3 "
Jan. 1, 1842	9 "	5 "

It was the state of our commercial relations consequent on our excessive importations, and the refusal to take our Breadstuffs in payment, which occasioned the shipment of specie, the derangement of our currency, the failure of our merchants, the suspension of specie payments, repudiation, and the derangement of all our internal and domestic concerns. The past was too recent and too destructive to be forgotton. It should have taught a lesson of wisdom, to provide against a recurrence, by requiring that the import of British manufactures should be permitted, only on an arrangement of equality, to receive in payment the Breadstuffs and other staple productions of our country.

It must be bad legislation to have allowed, for so many years past, this relation of a debtor country to have borne down our Commerce and National Industry. Till equality in our intercourse shall be established, in mutually trading, taking, and receiving each other's staple productions, our independence as a Nation is not yet complete. The balance of trade for the last thirty years, with very temporary exceptions, has been against this country. The debt due for imported articles being always to be paid by the debtor, and in the country of the creditor, the cost of the transmission is added to the price of the goods, and is thus paid by the consumer. The recently opened ports of England receiving our Breadstuffs, has not come from either the legislation or the diplomacy of that country; nor from that of our own—but it has come to us as the boon of Famine. What diplomacy could not accomplish, nor legislation coerce, the Potatoe Rot has provided, and has, *for the time*, repealed the the Corn Laws of England, and opened to us—for the first time in the history of our country—an equal trade. In one short year the balance of trade has been equal or in our favor. The result has

Dates.	Exchange on London.	Spanish dollars.
July 1, 1842	7 1-2 per cent. prem.	4 per cent. prem.
Jan. 1, 1843	6 "	5 "
July 1, "	8 1-2 "	3 "
Jan. 1, 1844	9 "	5 "
July 1, "	9 1-2 "	4 "
Jan. 1, 1845	10 "	4 "
July 1, "	9 1-2 "	4 "
Jan. 1, 1846	9 "	5 "
July 1, "	8 "	4 "
Jan. 1, 1847	5 1-2 "	3 "
July 1, "	6 "	5 "
Nov. 10 "	10 "	3 "

been, in this one short year, unequalled prosperity to all departments of our People. The annexed table of *Imports** for *seven months* only, will confirm and illustrate the cause of this new impulse on our country. It has reached every pursuit, and every condition of society. Time forbids me to specify. The Canal Tolls of the State of New York, however, will serve as one thermometer of this sudden prosperity; and indicates the tone of public feeling. The announcement of an open Trade in the fall months gave an *excess* of Tolls for 1846 of nearly a quarter of a million of dollars. The *excess* of *Canal Tolls* for 1847, over former years, is already nearly and will close the season with about one million of dollars *advance* beyond former years. It arises from our Breadstuffs rushing to this new market, hitherto closed against our agricultural productions. With a market, and prices on all our productions suddenly and greatly augmented, Agriculture, Commerce and Domestic Industry, have had a Holiday of Prosperity.† The event has established beyond

* "EFFECTS OF THE FAMINE IN GREAT BRITAIN.—The following statement of the import of breadstuffs into the United Kingdom; from the 5th of January to the 5th of August, during each of the three last years, was prepared by the Board of Trade, and is probably as near correct as can be ascertained. This statement exhibits at a glance the enormous deficiency in food caused by the failure in the potatoe crop:

	1847.	1846.	1845.
Wheat, qrs.*	1,133,364	999,875	202,559
Barley, qrs	597,091	99,693	264,182
Oats, qrs	837,916	340,341	274,535
Rye, qrs	27,302	192	303
Indian Corn, qrs	2,542,866	348,479	41,757
Buckwheat, qrs	22,715	932	1,769
Wheat Flour, cwt	3,165,067	1,900,239	190,902
Oatmeal, cwt	22,614	1,388	1,677
Indian Meal, cwt	970,314	95,064	
Rye Meal, cwt	200,448		
Barley Meal, qrs	8,378		
Beans, qrs	281,183	146,825	95,597
Peas, qrs	86,548	59,419	31,736

(* The English quarter is eight bushels.)

† ☞ Mark!—How the domestic supply from our improving manufactures, and the recently open trade between England and the United States, for our agricultural productions, have turned the tables in our favor!

The London Quarterly Review (September, 1847) states, from official tables, that the exports of the United States, contrasted with the imports for three several periods of five years each, showed—

future contradiction, the justice and the policy of hereafter demanding, at least, *Equality* as the basis of Trade. Integrity will blush for the past. It can no longer be mistaken in the wisdom of measures of defence. The effect of an *unequal* trade, and with a continued balance against the United States—formerly matter of argument, and actively disputed by *agents*— is *now* demonstration, since the open trade between the United States and Great Britain, occasioned by the destitution in Europe. The tables are turned. This is abundant evidence of the correctness of the principles of the American Institute, and which it has advocated for the last twenty years.

Another year of famine would shake Great Britain to her centre. It must be remembered that when the armies of France with Napoleon at their head, went forth, trampling down the Governments of the Continent, and wandering in their ravages from Egypt and the Red Sea, even to the Frozen Ocean, England, from her insular situation and her naval power, stood the only place of safety. The wealth of the continent was sent to her for safe keeping. She received it in deposit, and became the Banker of Europe. She subsidized the Continental Powers with her "Government Bills." These sums have been expended in schemes to establish her colossal power and her commercial supremacy. They exist now only in the enormous amount of her debt. That National Debt is stated to be 800 millions of pounds sterling—equal to 4000 millions of dollars; a sum beyond all hope of payment till the besom of destruction shall wipe away the account. The few millions of specie she has in deposit, is too small a foundation for such an edifice. The Bonds of her indebtedness were called "*Securities*;" and then being

From 1815 to 1819 inclusive—Balance of trade *in favor* of England		£27,827,415
" 1826 to 1830	do. do.	6,639,901
" 1842 to 1846	Balance of trade *against* England	35 677,941

The comment of the Quarterly Review is :

"Well! we have made the largest imports ever known, and what has been the result? It is, alas! that our Exports are diminished, and less profitable;—that with our greatest customer [U. S,]instead of a great balance in our favor, there is, in the five years of the experiment, a fearful balance of £35,000,000 against us—that a considerable portion of our manufacturers, merchants, bankers, and brokers, are ruined—that the wealthiest firms are breaking and oldest houses tumbling down in all directions—that great manufactories are closed and closing—that the terrified operatives themselves are imploring their masters to work *short time*—that is, to allow them to work for short wages rather than starve altogether!"

estimated as *wealth*, served as the capital of her institutions. Her currency is *paper*, issued on the Deposit of an equivalent amount of these securities. It is the exhibition of the most stupendous fabric of the Credit system that the world has ever witnessed. Our country has suffered under its influence beyond the power of much further endurance.

When a foreign country shall offer to trade with us, and ask us to take the productions and the labor of her People, in the shape of her Manufactures; we may well give our assent, when she, in turn, will receive in payment the labor and the agricultural productions of our country. While England *refuses* to take our products in payment, self-preservation requires that we should not admit her manufactures free. The motto of America is equal rights and privileges; and if there *is* Free Trade; it must be Free Trade *for both sides*: and not for one only. Let us have equal privileges, but not consider our ports thrown open to foreigners and *theirs shut* against the agricultural productions of our agricultural country.

The plain substance of the whole matter is, that if we take the Manufactures of a foreign country, they must take our produce—I do not believe in that one-sided equality, *where one side is always down*. We do not allow the scales of Justice so to hang: nor the rights of individuals so to be weighed. Let us, I repeat, have Free Trade, if at all, on both sides—Equality is the motto of the country, and should be enforced.

There is one more subject which, perhaps, in justice to the American Institute, should be noticed. It is this: An inquiry has been started by private individuals, and echoed, by portions of the Press, on seeing the unbounded success of our Fairs—"What is done with all the *money* received for entrance?"—and this is couched in the form of an insinuation. A short statement of the matter is due to the Institute. Whenever it has been my lot to preside over any institution—as I have over this from nearly its commencement until within a short period—it has been the invariable rule of my life to examine, pencil in hand, the monetary and financial condition of that institution, and to look into the statements of its condition from time to time. This course I pursued while President of the American Institute, and I must say that at no period since its commencement has there been any defalcation or fraud in its management, and

at no time an absent dollar. So far have these Fairs augmented our funds for the good of the Farmer, that, I candidly say to you, the Institute has now at interest about $7000, every cent of which awaits but the order of the Institute; and this they are not at all backward at giving, when *any good* is to be accomplished by it. The object is to sustain with it the current and necessary expenses of the Institution, and whenever the Wisdom of the State shall come in aid, perhaps to establish an Agricultural School. It may be asked who, all this while, has been the superintending Agent; under whose auspices, aided by the Board of Managers, these financial wonders have been performed; and to whose cautious foresight so much is owing.

It is Thaddeus B. Wakeman—who has extended his care over it from the beginning till now. (Great applause.)

As an example of the manner in which the "money" of the Institute goes: you know the receipts of this day and evening are to be set apart for the benefit and relief of the child injured by one of the agricultural machines on the bridge, which, it is hoped and believed, will be about the sum of $1,000.* The accident was not the fault of the Institute, but the indiscretion of the child and I am directed distinctly to announce, that if parents will hereafter send children here too small to take care of themselves, the officers of the Institute will *endeavor* to guard them, but that competent persons must be sent to take care of them, and that the Institute cannot, hereafter, appropriate its funds for the relief of such cases.

[The speaker then made a passing allusion to the Pyrotechnic display of the evening, in competition for premiums, and particularly noticed the Band from the frigate *Macedonian*—which at intervals during the past day or two, had discoursed most excellent music—thanking them in handsome terms, in the name of the Institute, for their polite endeavors to enliven still further the already cheerful and pleasant exhibition. He then proceeded:]

I will not further detain you, hoping you can agreeably occupy the remainder of the time in viewing the many elegant and useful articles around, which time forbids me to remark upon. Greatly obliged by your kind attention to these few and desultory remarks,

* $1000 has been since settled on the child.

I bid you all farewell, at this the close of the Twentieth Annual Fair of the American Institute of your city.

Gen. Tallmadge here took his seat, amid the loud applause of a large audience, who, for nearly an hour, had listened with attention and enthusiasm to the remarks of the speaker, delivered as they were, in a strain of animation and terseness and embodying great force of argument.

FARMERS' CLUB.

REPORTS OF MEETINGS.

March 2d, 1846.

Judge Livingston in the chair. Henry Meigs, Secretary.

Col. Edward Clark—Strychnine is a powerful medicine in nervous disease. Being a violent poison, it must be administered in very minute doses, a single drop of it is in many cases too much; it must be in solution much divided; it is an extract from the nux vomica. At the last club, some mistakes occur in the report of my remarks. What I said was as follows, viz: that the affinity of the oxides of iron for the acids was feeble; that the sulphate of iron which had been recommended by a French chemist, was as well as the other salts of iron, readily decomposed by the fixed and volatile alkalies, the alkaline earths, and also by vegetable action, and that its application would be found generally to be more expensive than that of very dilute sulphuric acid, which when applied to soils, is speedily neutralized, and then exerts a beneficial influence on vegetation.

H. Meigs. The following translation from the Revue Scientifique, &c., of Paris by him, on the formation of artificial alcaloides was read.

From the Revue Scientifique, &c., of Paris, Dec., 1845.

On the formation of artificial alcaloides. By N. E. Koop.

Study of Botanical Chemistry: This study as relates to all the important plants, would certainly be rich in new and interesting results. The following table contains the native alcaloides discovered up to this time. The constituents of the following are :

		Carbon.	Hy'gn.	Nitrogen.
Peruvian Bark,	Chinchonine,	20	24	2 and Oxygen
Yellow Bark,	Quinine,	20	22	2 ---- 2
Arica,	Aricine,	20	24	2 ---- 3
Brucia,	Brucine,	22	26	2 ---- 4
Strychnia and Nux Vomica,	Strychnine,	23	24	2 ---- 4
Opium,	Morphine,	17	20	Nitro. & Ox. 3
Ether and Opium,	Narcotine,	23	25	do & do 7
Poppy Heads, Kodia,	Codeine,	18	21	do & do 3
Like Morphine,	Pseudo Morphi.	12	18	do & do 12
Belladonna,	Atrophine,	18	23	do & do 3
Berberry Root,	Berberine,	17	26	do & do 3
Cheese,	Caseine,	16	26	8 ---- 3
Tea,	Theine,	8	10	4 ---- 2
Pepper,	Piperine,	17	19	Nitro. Oxg. 3
Tobacco,	Nicotine,	5	7	---- ----
Bitter,	Amarine,	21	18	Nitro. ---- 2
Guano,	Guanine,	5	5	5 and Oxg'n.
Sugar of Gelatine,		2	5	Nitro.& Ox. 2

NOTE.—These results are valuable, as tending to enable chemists hereafter to aid the physician in the application of such compounds as may be most suitable in cases of disease. Is the prostration of strength caused by tobacco—is the singular effect of tobacco smoke in relaxing the body when introduced—in a manner that no cathartic produces—due to its low constituents of carbon and hydrogen? May not these analyses lead us to the knowledge of the best means of cultivating some of these and other plants. Tobacco requires but 5 parts of carbon and 7 of hydrogen, while pepper wants 17 carbon and 19 hydrogen; cheese requires 16 carbon and 26 of hydrogen.

These views are calculated to set us a thinking at least.

H. MEIGS.

Mr. Wakeman moved the following resolution:

Resolved, That those who possess choice fruit trees, or can obtain grafts from such trees, be requested to bring them to this club and make general exchanges with other members of the club, and that they be brought to the repository at any time convenient to the owners; that the grafts may be safely kept here for distribution.

Adopted unanimously.

Mr. Wakeman presented the circular of the Repository of Arts of Hartford, Connecticut, signed by the committee, consisting of Messrs. Erastus Ellsworth, A. M. Collins, Lorenzo Bull, Solomon Olmstead, James B. Hormer, Horace Goodwin, jr., and N. H. Morgan. They propose to have in the repository the best models, drawings, designs, specimens and descriptions of every improvement in agriculture, manufactures, mechanics and the arts, and every thing of utility among us. Direct to the chairman, Lorenzo Bull, 142 Main-street, Hartford.

Mr. Wakeman observed that this plan merited encouragement, for every such undertaking was good for us and for all.

Col. Clark remarked that the plan of such repositories was fir introduced by our worthy corresponding secretary, T. B. Wakeman, by whom that of the American Institute was established.

Mr. Wakeman. We take a deep interest in the establishment of a new system of education, that is, agricultural schools, uniting all the useful sciences with practical work on a farm. And I am pleased to learn from Albany that our application for such a school with an experimental farm in or near this city, finds favor among the members of our Legislature. And also that we have reason to expect from Congress a favorable report upon the application of our last convention of farmers, gardeners, and silk culturists in October last, for a grant of land in Florida for a farm, to be employed for the purpose of a gradual acclimation of plants, in pursuance of the plan formerly adopted by Congress at the instance of the lamented Doctor Perine.

J. C. Hastings, of Clinton, Oneida county, New-York, presented Kirkland seedling apples and red Canada apples, both of which can be kept until June. These were tasted by the members, and were deemed so good that a resolution was unanimously adopted, requesting from Mr. Hastings grafts for distribution.

John Lodge, of Morrisania, presented grafts of a new seedling apple, from a tree only three years old. The fruit resembling the old Newtown pippin. Mr. Lodge requested as a particular favor, that those who have good fruits, would bring grafts of them to the club for exchanges for others. The modes of grafting as laid down in the Farmer and Mechanic newspaper, if followed, will be successful.

Col. J. S. Skinner. The following letter from him was read; and a reference of the subject of it, was made as desired.

Dear Sir—Will you permit me to submit to the American Institute for examination and report, some specimens of oil extracted from a cheap substance with a view to have its quality pronounced upon, and a report as to the uses to which it may be applied. It is proper to add that I have no interest in the subject, except as a matter of domestic and agricultural economy, and some hope that the results may prove to be of utility to that great and neglected class whose welfare we are endeavoring to promote. When I say neglected, I mean by themselves, and in the legislation of the country. I will only allow myself to say further, that it would be hopeful intelligence to learn that these specimens of the crude and of the refined oil, refined by a process in which it is said to lose only 15 per cent, had been committed to the care of Professor Mapes and Renwick.

Submitting all to your well known zeal in the development of all our industrial resources,

I remain, sir, very truly yours,

J S. SKINNER.

To T. B. Wakeman, Cor. Sec. Am. Inst.

22d February, 1847.

Col. Edward Clark. If this oil is obtained from cotton seed, it will be useful for lamps.

Mr. Wakeman, requested the members of the club to send in written communications, giving their views of the new system of agricultural education, that we may have all the light possible, in the organization of such schools. There seems to be a general agreement on the subject of the position for the first school, and that is near New-York city. The object is education of the right sort, perfectly practical, for the mass of our people. We can have some independent and patriotic man who will serve as president without salary, for the love he bears the cause; and even professors of high science who will also serve the popular cause, and others who will do so for small salaries. And the daily labor of smart young scholars on the experimental farm, will add greatly to the resources of the school. Such a school will soon alter the views of our people on the subject of education.

Mr. Meigs. Such an experimental farm will become of very high value by merely raising the best of all seeds of all useful plants. There all the bad seeds will be condemned to the flames. There will

be no inducement to sell the false seed which cheat a man not only out of his years crop, but out of one year of his life, for it is almost as bad, to find the labors of a whole year in vain by planting *false seed*. Such a seed shop as there will be on this farm, will be resorted to from all quarters. Your unpaid president will never bear the reproach that the State seed shop has sold or even given away, *bad seeds!*

Mr. Hyde. Our attempts to establish manual labor schools have hitherto wholly failed in this country, by being in hands too learned to be practical. The learned and excellent Dr. Dwight of Yale College, before he was president, by his personal attention to his farm nearly maintained his family, and at the same time, taught scholars and preached his sermons, finding abundant time for all these avocations.

Mr. Wakeman. I was fortunate enough to be one of his scholars, and I confirm the truth of Mr. Hyde's statement, with his own hands my reverend master raised vegetables enough for all his family.

Mr. Hyde. I have kept a school in Georgia, had a farm of only four acres, worked it all with my own hands, kept two cows, a hog, and was employed daily with my scholars six hours.

Boston, Feb. 24th, 1847.

My dear sir:—I will not leave the United States without expressing my thanks to the Institute, and to you as its organ, for the invitation given me to deliver an address on the agriculture and arts of the Chinese—which nothing but the imperative nature of the duties in which I have now engaged would prevent my doing; and if I return from Mexico, I shall be very happy to comply with the wishes of the Institute in regard to that or any other subject.

I am, very truly and respectfully,

C. CUSHING.

T. B. Wakeman, Esq. Cor. Sec.

March 30, 1847.

Hon. James Tallmadge in the Chair. Henry Meigs, Secretary.

C. N. Bement, of Albany. The following valuable experiment made by him in the planting of potatoes, was transmitted to the club by T. B. Wakeman, the Corresponding Secretary, who is at present in Albany, on the business of the Institute:

T. B. WAKEMAN, Esq.:

Dear Sir—On looking over my *Diary* a few days since, which I kept during my residence on my farm, I found the following experiment in planting potatoes, which I offer for the consideration of the Farmer's Club.

I had understood from some publication or other, that it was a nice piece of economy to plant the eyes only of potatoes, and give the hearts to the pigs. Knowing well, too, that a farmer who would wish to thrive, must save all he can and waste nothing, I thought it was a piece of economy worth attending to. I therefore fed the hearts to the pigs, and I suppose they did the beasts some good, the dissertations to the contrary notwithstanding. It struck me, however, that though potatoes would grow from eyes, and that hearts might fat pigs, whether these same hearts might not be more valuable as affording nutriment to the young shoots of the potatoes than the pigs. I therefore weighed two pounds of potatoes, and after cutting the eyes out, planted them in four hills, the eyes and hearts being equal in weight, each one pound. Four other hills I planted with two pounds of potatoes cut in the common way, eye and heart together; and also four other hills with two pounds planted whole; and on raising them in the fall, and weighing the crop, the eyes without hearts weighed fourteen pounds and a half; eye and heart cut, twenty-seven and a half pounds; and those planted whole weighed twenty-seven pounds. They were all of the same variety, pink eyes. The ground was equally good, and though the season was too dry, they all fared alike. Four hills of the red potatoes, planted in the same ground, and of the same weight, yielded but thirteen pounds.

The experiment is on a small scale, but it is sufficient to satisfy me that the taking the hearts from the cuttings, is robbing them of that, "which neither enriches the *pigs* much, but makes the cuttings *poor indeed.*" This experiment also serves to show, that whether potatoes are cut or planted whole, the difference is of no consequence. What is gained by cutting would not pay for the labor. As to the red potatoes, I must confess I was *beat*—why they should give only half as much as their white neighbors, the pink eyes, I know not. I knew long since, as every one knows, that some kinds of potatoes are much more prolific than others; the worst for eating being generally the greatest bearers.

With great respect, I remain sir,

Your obedient servant,

C. N. BEMENT.

Mr. D. J. Brown presented for distribution, an improved variety of Indian corn, raised by John Brown, of Long Island, in Lake Winipissiogee in New Hampshire, in lat. 43° 40′ The following account of it is extracted from the 3d number of the American Agriculturist, volume VI., for March, 1847, viz: The island on which my farm is, comprises about 1,100 acres. A large portion of it is good arable land ; the soil brownish yellow loam and where cultivated, is warm and retentive of manures. The sub-soil is of a bright yellow, underlaid by a hard pan. A specimen of the soil from a highly cultivated field, which had produced 130 bushels of corn to the acre, was analyzed by Dr. C. T. Jackson, of Boston, and gave the following results. Mechanical separation of 1,000 grains of gravel, sand and loam.

Coarse pebbles	90
Fine do	260
Fine loam	650
	1,000

Chemical analysis of 100 *grains*

Insoluble Silicates	80.8
Peroxide of Iron	2.2
Alumina	4.0
Salts of Lime	0.4
Magnesia (a trace)	
Phosphate of Alumina (a trace)	
Vegetable matter	8.7
Water	3.9
	100.

500 grains of the soil were digested in boiling water, 2-3 grains dissolved; the solution was of a yellow color, consisting of

Vegetable matter	2.0
Mineral	0.3
	2.3

The residue from the solution before burning, was acid, and after burning, alkaline. The acid was then a vegetable acid. The following substances were taken up by the water, viz: Muriatic, sulphuric, carbonic, and phosphoric acids, soda, lime, magnesia, silica, iron and manganese.

On this soil, after a crop of potatoes, in the fall, I cast on 18 or 20 loads of barn yard manure, (fifty bushels to the load) spread it broadcast and plough it in. From the beginning to the middle of May following, harrow the ground well, and add thirty loads of green unfermented stable manure made during the winter, and immediately plough it in sufficiently deep to be well covered. By this process the coat of fine manure, applied the fall previous, becomes well incorporated with the soil, and gives the young corn plants a rapid start, while the coarse manure applied in the spring lends its aid in filling out the ears. From the 20th to the 25th of May, the ground is again well harrowed, and shortly after, planted. The variety of corn I employ (which sometimes bears my name) was produced by cultivatimg for successive years, selected ears of the Northern eight rowed yellow, corn, *with cobs having small butt ends*, of good length and uniform size, *the second ripe in the field*—and taken *from stalks bearing more than two ears each stalk.* The grains of this corn are large and the cobs small—the ears usually from ten to thirteen inches in length. The largest crop I have raised is *one hundred and thirty six bushels of shelled corn* per acre—weighing in the ear 9,420 bbls., or 70 lbs. to each bushel, including the cob, and when shelled 50 lbs. a bushel. I plant my corn in hills (four kernels to each) three feet apart one way, and two the other, reducing the number in each hill to three plants. The first hoeing is neatly done, when the plants are about three inches high. In July I dress the hill by a second and third hoeing, lightly moving the surface of the soil, without making any mould or hill—leaving the ground quite level and smooth. Early in September, or as soon as the ears are completely formed, and their silks begin to dry up and wither, I top the corn for winter fodder. Towards the end of that month the crop is usually harvested, immediately after husked and stored on the ear in the granary until required for the market or the mill.

Note.—This variety of corn, from the high degree of estimate in which it grows, appears to be adapted to all the New England States, New York, New Jersey, a portion of Pennsylvania, Ohio, Michigan, Illinois, Canada West, Iowa, Oregon, &c.

John W. Chambers, Clerk of the Institute, then shelled five ears of this *Brown corn*, about ten inches long each, in presence of the club, and the grains from them just filled a quart measure.

The Chairman—It is a practice among farmers, or some of them, to turn the sod of their fields in the spring and then plant on it.

Let us urge them to turn it in the fall, so that by exposure to the winter frosts, the grubs may be killed, then harrow the ground in the spring. Others say that when the young grass of the sod has started in the spring, then turn it over and the grubs will go down to feed on the tender grass, and let the corn alone. Farmers in different districts differ about this.

I present for examination a curious vegetable production of a vine resembling in many particulars the hop vine. The potato, for something like that it is, resembles in figure a bishop. Mr. Dorr, of Galveston, says that it is from the mountains of Mexico. It is an annual, and is used there as a potato. Sometime ago I had two of these potatoes, which I planted, the vines from them grew some fifteen feet in length, and had twenty or thirty of these potatoes or excrescences on the joints of the vine.

Samuel Allen—presented a letter from Richard H. Jones, of Charleston, S. C., on the subject of the new silk grass, which was read.

This silk grass is from the Yucca Filamentosa. Some persons are also engaged in producing for market the fibre of bears grass, calling it silk grass. Gen. Call, of Florida, is engaged in preparing the Yucca Filamentosa. Mr. Jones desires to know what soil this plant delights in? what amount of fibre it produces? what is its worth? &c., and where the seeds of it can be procured.

D. Jay Browne—Gen. Call has communicated with the Navy Department of the U. S. on this subject. The plant in question, I believe to be the *Yucca gloriosa*, commonly called Adam's Needle. It is a native from Virginia to Florida, and has been used from time immemorial by the Indinas for cordage, nets, &c. It is cultivated in England as a conservatory plant, being more perfect in its vegetation, as such, than when grown in the open air.

Dr. Underhill. Mr. Beale, of New York, has brought here for trial, an article to be dissolved in water, and in the solution potato sets are to be steeped for twenty-four hours, and it is said the disease will be avoided. Mr. Beale has three other packages for sale, at cost. The article is prepared in England. Let some members try it.

Kagenbusch & Co's. Compound for Diseased Potato sets.

DIRECTIONS FOR USE. Dissolve the compound in water, in the proportion of 4 gallons of water to 1 lb. of the compound; steep as many sets in the solution as the liquor will cover, from 20 to 24 hours, after which the sets will be ready for planting, but should the weather be unfavorable, they will not be injured by laying in a dry place for a day or two.

The liquor remaining after the sets are taken out, may be used over again by filling up the tub with water, until the quantity of originally mixed is made up, and dissolve in this half the quantity of compound used in the first mixing. This process may be repeated with the remaining liquor, until sufficient sets are steeped.

Copy of a letter in the Leeds Mercury Aug. 22, 1846.

GENTLEMEN: The almost universal prevalence of the disease in the potato crop this year, is, I trust, a sufficient apology for my trespassing on your columns, by stating, that happening to steep some part of my sets in a compound prepared by Kagenbusch & Co., manufacturing chemists, Leeds, which I was informed would assist germination, and insure a more abundant crop. I have unexpectedly found, that the result is not only quite satisfactory in that respect, but the produce is quite sound and healthy; whereas, the unsteeped sets planted close by their side, are attacked by the present disease. This difference is quite marked and distinct, and I shall be happy to show any person, so that they may judge for themselves.

I am gentlemen, your obedient servant,

JOSEPH LAWSON.

Bramely, near Leeds.

Having received a few packages of the above compound from Europe, I take the liberty of presenting one to the Farmers' Club, to be disposed of as they may think proper, in order to ascertain if the benefits derived from using it, are equal to the favorable accounts of it.

Very respectfully,

JOSEPH H. BEALE.

Farmers' Club, New York.

Dr. Underhill, presented grafts from the Bolmar plum, taken from a tree grafted from the original tree planted by Mr. Bolmar, near the old tea water pump in this city. He found a plum-pit in a package imported from Europe, and planted it. This plum is very

large, and fine, has sometimes been called the Bolmar's Washington plum. Dr. Cockecroft, of this city, gave these grafts to Dr. Underhill for distribution. The tree differs from other plum trees in its form, its branches strike out from the trunk rather horizontally—it is a characteristic of this Bolmar plum tree.

Isaac Q. Underhill, of Jersey, called for information as to the best cement for grafts, and he presented grafts of a fine large sweet apple, and also of an early tart apple of good quality, which ripens at the same time as the bow apple.

Mr. Fanning. An experienced gardener of more than thirty years standing, had grafted extensively for the late Jesse Buel, said that he used 1 part beeswax, 2 parts rosin, and 3 parts hogs lard, melted together.

Mr. I. Q. Underhill. There is too much grease in your composition, it hurts the grafts.

Mr. Lyon. Take 1 part of good beef tallow, 2 parts of pure bees wax, and 4 parts of rosin, melt and mix them well, pour it into cold water, work it up like shoe maker's wax, it will neither melt with the heat of the sun, nor crack in cold weather.

Professor Mapes. Why not use thin India rubber bands?

Judge Van Wyck. Trees which exude much gum ought not to be grafted, such as the peach, plum, nectarine, cherry, &c. The grafting is difficult on account of the exudation of their gum.

Professor Mapes, exhibited an India rubber band, showing its very expansive and tenacious qualities, thus capable of adapting itself to the expandihg growth, and at the same time closely covering the grafting from the weather.

Mr. Cummings, of Williamsburgh, presented grafts from his fine fruit trees, which are cultivated in the very best manner. He gave several hundreds of grafts from his St. Michael pears, Baron Louise, Napoleon, Madeline, Autumn Superb, Duchess of Angouleme, Jefferson Plum, Large Stripe Apple, Bloodgood, Fall Pippins, Kirkland Seedling, and grafts and cuttings of many other fine fruit trees and grape vines were presented and distributed from Dr. Underhill, Gen. Jeremiah Johnson, Mr. Hastings and others. The number of grafts and cuttings distributed was nearly one thousand, which were received

by the members with a satisfaction which was strongly marked, and which evinced the noble interest taken in the propagation of the most excellent fruits and plants of our land The number of members in attendance during this meeting of the Club, was about 150.

Gen. Tallmadge having left the chair, Judge Livingston was elected for the remainder of the sitting.

R. L. Pell, of Pelham, offered the following resolutions, which were read and unanimously adopted.

Whereas, This society having noticed with great pleasure the exertion of one of its members, in procuring a large ship to carry grain and meal to Europe, to supply the deficiency of the potato crop, and convinced that the same will further the great agricultural interests of this section of the country, are desirous of encouraging all such efforts. Therefore, resolved, that we recommend to the farmers and others of this vicinity, to send their contributions and those of their neighbors and friends, by this ship, the Macedonian, now lying at pier No. 4, North River.

Resolved, That the good wishes of the Club, and of the country, are due and are hereby tendered to our member, George C. De-Kay, for his efforts in procuring the use of that ship, for so laudable an object, at the same time saving the lives of starving thousands, and giving encouragement to our agricultural interests.

Subject for the next meeting, grafts, cuttings, seeds and grafting. Adjourned to Tuesday next.

H. MEIGS, *Secretary.*

April 6, 1847.

Judge Livingston in the chair. H. Meigs, Secretary.

Mr. Meigs, read the following translations made by him.

Annales D'Horticulture, Paris.

Society of Rural Economy of the Grand Duchy of Baden.

When it is desired to transplant trees already large, we must secure the large roots from motion by the wind, by means of cramps of wood, well driven down, before we cover the roots with earth. The trees grow much better in consequence.

In order to stop the gummy exudation from cherry trees, wash the gummy spots with strong soap, and tie a bandage over them, with soap enclosed. This is stated to be very efficacious.

Potatoes.

Mr. Bergmahn, a merchant of Waldheim, remarks that potatoes are so much the better and more mealy, as the leaves are more round; that pointed leaves indicate an inferior quality in the tuber, and he says that he has experimented upon more than one hundred and twenty kinds of potatoes; that the Beck potato, which is marbled bluish-red, holds the first rank.

Scions of fruit trees arrived at Falmouth, England, from Bombay, in good condition, being covered with grafting wax, placed in cotton, wrapped up in India rubber cloth, and then suitably baled up.—*Translated by H. Meigs, sec'y of the Farmers' Club, April 5, 1847.*

Joseph Utley, of Perrysburg, Wood county, Ohio; The following letter from him was read:

PERRYSBURG, WOOD COUNTY, OHIO.
March 26, 1847.

Henry Meigs, Esq. Dear sir—The interest you take in agricultural matters, is the apology I have to offer for the liberty I have taken in addressing you.

I live in a section of country, that has been blessed by Providence with one of the richest soils that is to be found in the west, but from which the farmers are not able to take good crops of wheat. This kind of soil predominates throughout the western country, and if science could step in and tell the farmer what his soil lacks, and in what manner the difficulty could be obviated, thousands of dollars would every year be added to the wealth of the country. I know of no way that this could be so effectually brought about as through the "Farmers' Club," provided they are willing to receive a sample of our soil for analysis, and at the same time give to the people of the West, the lights of their experience in the matter.

At the same time they would be benefiting us, they would be reaping an advantage from it themselves, as the sample I would send, is that from which our large crops of corn are taken. In telling us what to add to our soil to produce good wheat, our soil, perhaps,

would tell them what to add to theirs to make it yield good crops of corn.

I have my own opinion in regard to this matter, and have arrived at it from the following facts.

The following I believe to be a correct analysis of wheat and its straw.

	Phosphoric acid.	Silica.
Grain of wheat,	50	none.
Straw,	1 to 3	30 to 60

On our western soils, (as the farmers say,) "the wheat all grows to straw," and the natural conclusion (theoretical) that one will arrive at, is, that there is an abundance of silica and a want of phosphoric acid.

To remedy this evil, if left to my own resources, I should use bone dust. It will be a very interesting subject, and afford a fine opportunity for testing practically, what science teaches us theoretically.

If I was myself a farmer, I would test this subject experimentally, but my business is of entirely a different character, consequently I have not the opportunity of doing so.

With much respect, your obedient servant,

JOSEPH UTLEY.

R. Hall. The following communication from him was read:

To the Farmers' Club.

Gentlemen—For twenty-five years I have been engaged in ship-store business, and formerly found much difficulty in furnishing corn meal that would keep sweet on long voyages and in warm climates.

On my reporting the difficulty of keeping corn to Zenas Coffin, Esq., one of the oldest whalemen at Nantucket, he informed that there was no difficulty in keeping corn meal sweet for a three years voyage, by putting a beach stone, the size of a large paving stone, in the centre of a hhd. of meal, and hooped tight, and for a barrel, a stone of four or five inches in diameter and made tight. From the above information, I made experiments to Rio Grande, and other

southern ports, by sending meal with the stone, and without the stone, and on return of the ship, I found the meal with the stone in the centre of the cask kept sweet, while the meal without the stone all spoilt—*sour*. The cask should be water-tight.

R. HALL.

New-York, April 5, 1847.

N. B.—Corn meal in tight rum puncheons, to the West-Indies, will keep sweet, when in the common flour barrel, it will all spoil.

R. H.

Isaac Q. Underhill, of N. J. I have a particular kind of German apple quince, that is in no way affected by the worms, for which I have taken the first premium at the Fair of the American Institute. It comes to maturity in two or three years. I have sold the quinces from them for three years past, notwithstanding the low price in the New-York market, at three dollars per hundred. These trees will be for sale on Saturdays in each week, at No. 104 Barclay-street, N. Y. at John Ball's, from 11 A. M., to 3 P. M., at two shillings each.

C. N. Bement, of Albany. On the comparative view of raising wheat in England and America. The following communication from him was read.

Note. The communication referred to, will be found in another column, copied by us from the "American Journal of Agriculture and Science."

C. N. Bement, of Albany. The following communication from him on the subject of the osier willow, was read:

Osier Willow.

C. N. Bement presents two stalks of Osier Willow, of one year's growth. I have four rows 57 feet long, the rows 3 feet apart; I have just sold the spring cuttings for $4 to a German, for basket making.

Last spring I set out with cuttings 1¼ acre, which when four years old, if they grow as vigorous and thrifty as then, four rows will produce at the rate of $100 per acre.

This willow flourishes best in a wet soil, too wet for grain or grasses.

I am imformed that large quantities of this willow are imported from France, &c

If it will command such a price, what crop would be more profitable?

D. Jay Browne. On Grand Island, in Niagara River, there is an extensive marsh, comprising about two hundred acres, covered with fir, resembling the osier willow. These willows have been used for wicker-work, and were found to be good.

Mr. Meigs. Will members please to state where, in this vicinity, they can be obtained?

Isaac Underhill, of N. J. James G. King, of Hoboken, has them on his farm.

Judge Van Wyck. The osier willow, like the whole family of the willows, is attached to low wet grounds, and the value of it seems not to be generally known.

Mr. Meigs. I found a very few osier willow cradles in Philadelphia, more than forty years ago, and admiring them for their neatness, for their safety to the infant, which cannot injure itself by contact with its yielding nature; I thought it so superior to all the pine, cherry, mahogany and oak cradles I had seen, I bought one, which has now cradled two generations for me, and is fit to cradle *ten more.* And if handsome baskets and boxes are made of it to bring any suitable produce to market, then the farmer will find a profit in the basket or box, as merchants formerly did by making regular trunks to send their goods in to this country, and as the Frenchmen do by sending us their choicest prunes in boxes, ornamented and useful for other purposes.

D. Jay Browne. In planting the cuttings of a grape vine, take two slips of about ten inches long, set them in the ground with their tops inclining to each, leave the topmost buds about half an inch of soil: the rains will cause the soil to settle, even with this bud, in a short time. If one of the cuttings should fail, it is probable the other will thrive.

Judge Van Wyck. Short cuttings having but two buds are recommended, set with one bud under the ground, and one out.

Isaac Q. Underhill. Take grape cuttings eighteen inches long, set them in the ground, slanting, leaving two buds out. They ought to be covered with hay or straw, lightly, from June to September.

D. Jay Browne. Mr. Longworth, of Cincinnati, recommends the northern slope of ground for a vineyard in Ohio.

Mr. Kirkland, presented a seedling apple, which was tasted and pronounced a good fruit.

D. Jay Browne, remarked, that it was better than the majority of apples. It was approved by the club.

Judge Livingston. I recommend to our farmers to plant their potatoes early; it appears that such escape the disease more than late planted ones.

Judge Van Wyck. The potato disease is so capricious, that it is extremely difficult to say what the rule should be, at any rate I advise that we follow the practice of the successful farmer.

John Campbell, of Coxsackie, presented apples called Seek-no-further, and French pippins, they were tasted by the members of the club, and pronounced good.

Mr. Chapman, of Perth Amboy, N. J., presented grafts of *Belle Fleur* apple, None-Such apple, a fine greenish table apple, ripe in October and November. The *To Kalon*, a superior reddish grape, perfectly hardy.

Mr. Isaac Q. Underhill, presented grafts of the Jersey sweet apple known in Westchester, as the hard or bake apple. The Ladies blush, the best early tart apple yet known, a seedling—a large reddish apple, a seedling, from W. Post of Secaucus, New-Jersey.

Abraham Van Bockecak, presented some Baldwin apples, which were tasted by the members of the club, and were declared to be the best exhibited, and of an excellent qualily.

George H. Swords, of No. 116 Broadway, of this city, presented specimens of lead wire, for the purpose of securing vines and plants. They are sufficiently tenacious to answer the purpose of securing the vines, &c., and give as the vines swell. These wires of various sizes are sold at twenty-five cents a pound.

Many grafts, turtle soup beans, seeds of cocoa nut squash, cheese pumpkin, ears of Long Island yellow corn, and white corn, and Vermont early white corn, were distributed among the members of the club, who as usual, manifested their zeal in receiving good authentic grafts and seeds.

Judge Van Wyck. There is a great deal of nourishment in the corn cob husk and grain together, when they are green, cattle eat all greedily, but as professor Mapes has said, when all the juices and nutritious elements of the cob have been carried into the grain, what there is left, is destitute of any nutritious principle, or certainly very little, all has passed into the grain when it is at its maturity, which is the crown of the operation.

Mr. I. Cozzens, gave to one of the members of this club, a few seeds of the Mexican Ranchero squash. This squash grows to about one foot long and four inches diameter, has a buff colored skin, red flesh, and seeds dark colored like most watermelons, very sweet, not fibrous and keeps long. This melon is yet good, although of last years' crop.

D. Jay Browne, presented an extract from a communication from N. Longworth, of Cincinnati, O., in reference to setting grape cuttings. He says: "We usually plant cuttings and it is invariably done when the person buys them, as roots would be too dear, and in favorable seasons, but little advantage gained. We never take the trouble to water the cuttings. In favorable seasons but few die."

Mr. Samuel Allen, suggested that perhaps it would be well to alter the hour of meeting of the club, from noon, to 9 or 10 A. M., by which means some farmers could attend and get to their farms after the discussions, by the afternoon boats.

Subjects for next meeting of the club, grafts, cutting seeds, manure and planting corn.

After the adjournment the following note was received from John R. Burrows:

To the President of the Farmers' Club:

Dear Sir—Having heard a statement made at the meeting of the Farmers' Club, to the effect that Indian meal may be preserved for two or three years, by putting a stone in the middle of a cask con-

taining the meal, I state in confirmation of the fact, that I have frequently understood from my father, that rye might be preserved for a great length of time, free from must, by the same process, and that he had frequently tried the experiment.

Whatever theories may be, the club is always willing and glad to have facts of a useful kind brought forward.

April 14, 1847.

Judge Livingston in the chair.

Annales de la Societe Royal, d'Horticulture, Paris, December, 1846.

Translated by H. Meigs.

Report by Monsieur Poiteau.

Mon. Vibert has occupied himself for a long time in the multiplication of grapes for the table, by planting the seeds of grapes, and his perseverance, although not gratefully rewarded, has nevertheless gained some very encouraging results. Besides his gain from the seedlings he has collected also table grapes, so that his catalogue now contains eighty-nine varieties of good table grapes.

Mr. Vibert says, and others have repeated his remarks, that the American grape called Isabella, ought to be called Alexander. This grape arrived in Paris, about fifteen or sixteen years ago with the two above mentioned names attached to it. Mons. Jaques is the first who showed its fruit ripe to the Royal Society of Horticulture of Paris. This grape has a very particular and very marked taste, which has been compared with that of the fruit *Cassis*. Ribes Nigrum L. and since that, has been called in Paris the *Cassis grape*. It has been proposed to use it to give a particular *bouquet* to ordinary wine; I do not know whether this has yet been tried. However this may be, the Cassis grape, with the Cassis taste, has not made its fortune; few persons eat the Cassis, and some find a *bug taste* in it.

This grape, although a curious one, has not been multiplied, I know a few gardens where it had been introduced and afterwards suppressed. When the fruit of this vine is known, it may be averred, that its very marked taste is never forgotten. I wished to know which of the two names, Isabella or Alexander, had been given to it in America, for this purpose I consulted the new American Orchardist of W. Kenrick

the editions of 1833, 1835, and lastly that of 1841, in which are described eleven kinds of the native United States grapes, presented as producing fruit good to eat or to make wine. In that number, figure the Isabella and Alexander. And I am sure that in the descriptions there given of these two grapes and of the other nine grapes, there is not one word which can relate to the extraordinary grape in question, the one we call Cassis grape. And as Mr. Kenrick mentions very carefully, the taste and the bouquet of all the grapes he describes, it appears to me certain, that our Cassis grape is neither the Isabella nor the Alexander, nor any of the American grapes described by Mr. Kenrick who is in our opinion, a methodical and exact writer worthy of confidence.

At a meeting of the society, on the 21st of October there was presented a beautiful Angevine pear, weighing 2¼ pounds. In November another weighing upwards of five pounds—a model of this pear was made and presented to Mr. Carim Gridaine, the minister of agriculture. In December, another from Tours, was presented to Madame Gridaine, which weighed five pounds and a quarter. Revue Horticole, *Paris, February*, 1847.

Mexico, which is so rich in ornamental plants, has furnished us with a new species of Cuphea, described by M. Bentham, under the name of Cuphea Platyantra. The scarlet flowers, very abundant and of long duration, are highly ornamental in flower beds. It is easily propagated by seeds and buds.

A charming variety of Chrysanthemum under the name of Paquerette of Chusan is also introduced.

THE PRANGO.

About 25 years ago, the attention of Agriculturists in Great Britain, was drawn to a new grass, sent by an English agent from the northern mountains of India. Mr. Moorecroft, the agent, thought it would prove to be a superior article. It is umbelliferous and is described by Dr. Wallich the superintendent of the Botanic Garden of Calcutta by the name of Prangos Pabularia.

Its quality as feed is to produce fat in an extremely short period, and to destroy the disease of the liver, which is fatal to thousands of sheep in England.

As to the longevity of the Prangos—forty years ago seeds of it were brought to the eastern frontier of Cachemire west of the city of Imbal, and were there sown with the yellow Lucerne. They both prospered, and we see at this day plants of the Prangos still flourishing which came from the ancient seed. Other seeds of it were carried to the East, planted in a rocky land and flourished for forty years. *Translated by H. Meigs, Secretary of the Farmers' Club.*

Chairman. Presented to the club a West India Squash, one foot long, and four inches diameter, having a light colored skin, with red flesh and dark colored seeds, quite sweet to the taste and evidently an excellent keeper.

Its seeds were distributed among the members.

Col. Edward Clark, presented seeds of the Marrow Squash and of the New Zeland Spinach, (the species Tetragona expansa, the family of the Chenopodiacea) also of fine Sunflower.

Col. Clark made some remarks on the peach worm, and recommended the application to the roots of a thin mortar, composed of lime and soil—covering the roots up to the surface of the ground. In order to apply it, the roots must be bared of earth for a short distance from the body of the tree; when the first applied mortar cracks, then pour on a little more of it. The trees thus treated have proved healthy; I consider it an effectual remedy for the worm; at little trouble or expense.

Oliver Smith. Col. Clark brought here once the worm which destroys the peach tree, in its pupa state. The perfect insect is of the same class as the wasp; it deposits its egg in July or August and sometimes in that period its Larvæ come out and soon begin to gnaw the bark of the tree, at its root, near the ground. After it has done gnawing it goes to rest; and it never does any harm to the tree in the course of its existence, but this. If lime was applied as Col. Clark suggests, it might prevent this, for the insect would go somewhere else to deposit its egg. But when the insect is in his mummy state, the lime would not affect it

Mr. Holmes. I have found the strong decoction of tobacco very effectual in the prevention and destruction of this peach worm.

Col. Clark. The insect has what may be termed an open cocoon, formed of slight portions of bark and some gluten—neither of which can resist the effect of the lime.

J. D. Williamson presented for examination, two potatoes from Santa Fe de Bogota, 800 miles in the interior of South America. They are of a very ordinary size compared with those of Europe or the United States, but the crop was deemed so extraordinary for size, that perhaps twenty thousand persons in that region went to see them.

Chairman. The practice in that country is to raise potatoes annually, from seed and not from tubers; consequently, their potatoes are all quite small when compared with those which we produce by planting the potato itself.

Col. Clark. I have planted some of their potatoes, they were quite small, comparatively.

The following article was then read by Mr. Hyde, on the much vexed question of the potato disease:

The subject of the malady in potatoes has been so much discussed, that the mention of it has become rather repulsive, and perhaps an apology is due for again reverting to it; yet, it is a fact that thousands are perishing by famine, in consequence of the failure of the crop of this valuable root, in foreign lands; and in our own country the loss in consequence of the malady is to be reckoned by millions. The difference in the cost of potatoes consumed in New-York and Brooklyn in one year, may be seen by the following estimate. Allowing the population of the two cities to be 400,000, and supposing each family to consist of ten persons, the number of families will be 40,000. Each family, probably, on an average, consumes one bushel per week, or say fifty bushels in a year. By this estimate the yearly consumption is 2,000,000 bushels. The increase in the price per bushel in consequence of deficient crops is about 60 cents per bushel, making the whole yearly loss $1,200.000. The loss to the whole country is immense, and as the season has arrived when the remedy for the evil is to be applied if used at all, the importance of the subject seems to justify introducing it, although rather stale.

To consider the potato disease as one of those inexplicable visitations of Providence, which no human skill can avert, and therefore, to give up all further inquiry, seems to me a conclusion unworthy

the intelligence and the enterprise of the present age. When careful and long continued experiments and observations shall have been made, and scientific research exhausted without any indication of success, it may be given up in despair; but neither have the efforts to ascertain the cause of the disease been so long continued; nor the indications of success so unpromising as to justify such a conclusion.

Much has been said and written upon the subject and many theories have been advanced, most of them founded upon careful observations and adhered to with great pertinacity. One discovers aphides among the vines of the diseased plants, and after many examinations he finds that where these abound the tubers decay, and where there are none the tubers are sound. He therefore concludes he has discovered the true cause, and gives no credit to any other theory. Another concludes, from his observations, that the disease is caused by fungi. Some attribute the disease to different manures, others to soil or to peculiarities of the season. All may be right in one sense; any or all of these causes may contribute in completing the destruction; but that no one of them is the primary cause is very evident. The very fact that there are so many and so various causes, either of which appears by careful observation to have been adequate, is of itself, sufficient to prove that they are all secondary, and in reality only effects of something beyond, which must still be sought as the true primary cause, through whatever instrumentality it may exert itself.

There are certain facts probably known to all, which I shall state here, not as anything new, but as the foundation of an argument.

1st. Potatoes have very generally ceased to produce seed, although blossoms may be seen in abundance; you may, in some instances, examine large fields in the proper season without discovering a single ball.

2d. The potato crop is much inferior in quality to what it was formerly. I have known 1000 bushels produced from a single acre, cultivated in a very careless manner, and in some parts of the field I have seen a bushel dug from four hills. 500 bushels per acre was formerly considered only a fair crop without much care in manuring, planting, or cultivating. What is considered a fair average crop now?

These facts seem clearly to indicate the loss of vitality in the plant. I infer, therefore, that the potato malady is in consequence of vitality

occasioned by long continued propagation from the root, without renovation from the seed This inference appears to me reasonable, because established principles of natural history justify it.

It appears necessary:

1st. Because the committee appointed by the Viceroy of Santa Fe de Bogota, nearly one hundred years ago, to investigate the same subject, after laborious research, reported that the disease was caused by loss of vitality, which must be renewed by planting the seed from the vines; and further, after five years they reported that among the planters who had propagated new varieties from the seed balls of healthy tubers, not a rotten potato could be found. This is a matter of record found in the archives of the government. (See Mr. Williamson's statement Agricul. p. 44.)

2d. Because the well attested facts, stated by Mr. Smith of Buffalo, as the result of his experiments, prove the same thing. (Agricul. p. 51 and Cul. p 21.)

It may be stated also, that the Savans of Russia, appointed by the Emperor, to investigate the subject have come to the same conclusion, and induced the Emperor to order from this country, all the seed that could be procured, as stated here by the venerable Mr. Thorburn.

That the inference is fairly drawn from principles and facts in natural history, I shall now attempt to show, and I hope to do it satisfactorily to every candid mind. It may be proper here to state some of these principles and facts; I offer the following propositions:

1st. Although most plants may be propagated either by the seed or by cuttings, the former method only can be perpetual ; the latter cannot be continued for any length of time.

2d. The progeny of any plant will possess all the essential properties, and generally most of the incidental properties of the progenitor.

3d. There is in the procreation of plants a tendency both to improvement and to deterioration.

4th. The better the condition of the plant at the time of procreation, the better will be the condition of the progeny.

5th. Although great changes may be produced in plants, yet these changes require time and frequently among reproductions.

6th. The circumstances of soil, climate, cultivation, &c., will do much to vary the apparent loss of vitality from age in plants.

7th. Plants that have lost their vitality are more subject to the attack of parasites than plants in a vigorous state. Plants have their peculiar parasites but they are not always confined in their depredations to the plants in which they originate.

8th. The production of abundant blossoms, few of which are succeeded by mature fruit, is an indication of loss of vitality, and generally on account of old age.

These propositions are too simple, and obvious to every careful observer, to admit any doubt. It would indeed, seem to be a retrograde movement in science to attempt to prove them, yet if granted, they are sufficient for my purpose; they will explain all the phenomena that have been observed and reported in relation to the potato rot.

The plant is said to be attacked by aphides; this is true, but it is explained by the 7th proposition above. Plants that have lost their vitality are more subject to the attacks of parasites than plants in full vigor. Fungi have been found in great abundance upon the diseased plants. This is explained in the same way, but it is said the attacks of these same fungi are not confined to the potato, and hence it is inferred that they do not originate in a disease peculiar to this plant. Parasites often prey upon plants in which they never originate.

It is said again, that crops, in many instances, were less injured by the rot in 1846, than crops upon the same ground were in 1845; although the seed for the crop of 1846 was taken from the crop of 1845. This is explained by the 6th proposition, which also accounts for the different degrees of disease in different soils and with different manures. In short there is no well authenticated fact in relation to the disease, that may not be satisfactorily explained by supposing the cause to be too long continued propagation from by the root, without renewing from the seed.

Although I have already said more than I at first intended to say, yet I cannot dismiss the subject without bestowing a hasty notice upon some editorial remarks in the Cultivator.

I regret that a person who stands so high, as does the editor of this valuable periodical, allows himself to take so superficial views of this important subject. In an article in the January No., p. 21, he

says: "If it were true that the potato disease were wholly constitutional, as our correspondent supposes, the vegetable would be equally affected in all locations, which is not the case." This is a strange inference indeed. He might as well say, if a man is affected with the scrofula, or any other constitutional disease, it is of no consequence what regimen he adopts, he will be just as likely to die unde one course of treatment as another.

Again he says—"If it can be proved that varieties of fruit degenerate by being propogated by grafting or budding, we should regard it as evidence that the potato might be affected in the way indicated." He must be a young man, or have spent his days among seedlings, not to have had opportunity of knowing, by his own observation, that although the quality of fruit is not deteriorated, but rather improved by grafting; yet the vitality of the graft cannot be protracted much beyond the natural age of the original stock. The choicest fruits of former times have all passed away, notwithstanding the efforts to continue them by grafting, and have been succeeded by new varieties, obtained from seedlings, many of which equal or surpass their predecessors. This is a fact so well established and so important, that it ought to be known to all interested in the cultivation of trees, and other plants; and especially to those, who from their position, are to give direction to the opinions and practice of others.

Again he seems to infer from his own experience that the disease in the potato cannot be eradicated by planting the seeds. He says: "of the six or seven kinds produced from seed, nearly all were evidently effected (affected) by the potato disease." Yet he admits that "one or two kinds seem to have more natural stamina than the others, and continued vigorous till the close of the season." This is precisely the result indicated by the 3d, 4th and 5th, of the above propositions. It is not to be supposed that a deeply seated constitutional disease can be wholly eradicated from plants or animals, by a single reproduction.

His own account, however, shows considerable advancement towards renovation by a single experiment.

There is certainly enough of probability about this theory to claim for it a candid consideration. Let it then be fairly and fully investigated. Let experiments of planting seeds be continued, and let the facts observed in all attempts to renew the vigor of the plant in this

way, be compared with the laws of propagation. If there are apparent discrepancies let them be published, and if they cannot be explained, by the principle of this theory, let it be abandoned.

An important step has already been taken by Mr. Smith of Buffalo, and his success has been as great as could reasonably be expected. It has, in fact, been in exact accordance with the fixed laws of nature.

This subject should be met by careful investigation, founded upon sound principles, and guided by common sense; not by that guessing method which knows no principle, unless it be to adopt the most popular opinion.

In conclusion let me ask—is there not much reason to believe, that if these experiments be continued, not only planting seeds, but the seed of balls, selected from the most vigorous plants; in a few years the potato rot will have wholly ceased, and this distressing calamity will have passed away.

Judge Van Wyck. Mr. Hyde has given to the Club some new and valuable suggestions. Experiments ought to be tried in conformity with them. Numberless seeds planted, give but rarely as good results as the parent plants. *Like* comes by the process of inoculation and by grafting, but perhaps the rule does not apply so perfectly to the potato.

Mr. Hyde. I am an earnest advocate for the new system of education proposed by the American Institute, and for one strong reason especially, that it is calculated to reach all classes of citizens, instead of the more wealthy only.

Thomas R. Lush presented a cutting of a native American grape vine, which he supposes to be the white muscadine; the parent vine was originally taken from the woods of Staten Island, in New York harbor. He hopes it will prove a good grape.

H. Meigs. I desire to elicit from the members their views on the interresting question of the proposed new plan of education, that of making real farmers and educated ones at the same time. I remind the members of one of the vast advantages of the agricultural school and experimental farm, which is, that there, all manner of choice and perfect seeds and plants can be produced, and their sale will be immense, for their true character will be guaranteed, so that the de-

mand for them will be universal. Taking away at once the base practices of trade in old, worthless wretched seeds and plants. And let me remind the club of Van Houtte's garden in Belgium, who ten years ago took a barren spot, of which he has now made a magnificent garden, where young men crowd for admission, where the scholars learn every useful science and labor in the garden too, where the seed department is managed with the accuracy of a bank, and which is utterly unable to supply the overwhelming demand for its authentic seeds and plants too.

Dr. Underhill, of Croton Point. And in the proposed school, the diseases of the domestic animals will be studied and taught by the veterinary professors. There are millions of our domestic animals, constituting an incalculable amount of wealth, and among them prodigious losses from diseases little understood for want of proper study. The milk disease is one affecting some of our western cattle. Animals in certain localities are subject to many of the diseases of our race, strikingly manifest in the fever districts of the west, where disease of the liver in cattle is so prevalent, that this part of the animal is rejected as unfit for the table. Similar to the human diseased liver, producing heavy losses, all of which may be alleviated or exterminated by due study and care. All this will be appropriate to the new school of agriculture. Establish the plan proposed by the American Institute, and the State of New-York will be benefited to ten times the amount of cost of the establishment. There are a hundred thousand acres in New-Jersey and Long Island, which will feel the renovating power. Is the proper adaptation of crops to soils well understood? Not at all. One field not 100 yards from another field, requires very different treatment, from difference in the soil, requiring another plan of manuring, &c. Many farms are nearly barren for lack of proper knowledge of their respective soils and capabilities, and much capital thrown away for want of a correct system. The subject of choice seeds is of the highest importance, and so is a general knowledge of all the great improvements in agriculture, in all parts of the world. Begin this agricultural school as it is proposed, and you will soon see many more of them established. You could not stop their formation any more than you can stop the fall of Niagara. Institutions of this kind would enhance the wealth, promote the independence and glory of our country.

Chairman. Observations might be multiplied without end on the benefits to be derived from such schools. The plan should be tried first near this city, there is so great facility for obtaining seeds and

plants by the vast commerce of this emporium, together with all information from Europe, from all the world, as well as from every point of our own country, at the earliest times; and all this knowledge will be immediately and readily diffused from hence throughout our wide spread land, and I have not the slightest doubt that the seeds and plants produced on the experimental farm here, would yield a great profit.

Let me quote a case from the vicinity of London, where a single family, father and descendants made several fortunes on twenty acres of ground by raising for sale, onion seeds alone! That seed was in demand on the continent, as well as in England, Scotland and Ireland, at the highest rates, for it was perfectly raised and preserved, and owed its great reputation to years of persevering toil and culture of that valuable root.

The investigation of soils and manures is highly important, there are many minor matters very essential, but this is the basis of successful farming, and this knowledge cannot be so well attained by mere practice, as it can be by an education for that very purpose, where science and practice daily alternate, in the routine of studies, labor and instruction, which our agricultural college and farm contemplate. That the young farmer may know the rules of judging or ascertaining whether the soil he is about to cultivate, possesses all the primitive earths necessary for the healthful growth of plants ; if it does, then to prepare his putrescent manures, animal and vegetable, the proper food of plants, and how best to mix or compound and preserve these, and the best time and manner of their application, so as to draw from them the best and greatest portion of nutriment, and to understand by analyses their chemical properties, and also the plants they are intended to feed, which food is most congenial with the habits or constitution of the vegetable he is about applying it to. Where the soil is deficient in one earth or mineral, and redundant in another, how to correct, in the cheapest and shortest way the deficiency of the one, and the redundancy of the other. Providence has so wisely arranged all her works, especially as relates to soil, plants, and the proper food of the last, as to have these move in harmony in their respective agencies; each earth has its different ingredients, and which can only be made to act by a happy mixture with other earths, each kind of manure its appropriate gases, which act as nutriments, and when happily combined, as to subserve the apparently mysterious economy of vegetation. This mystery we wish to develope and make clear to the humblest capacity, or as clear

as is allowed imperfect man to make it. A portion of this probably will always remain hidden, and the other only appears so to the careless inattentive or uneducated observer of natures works. We wish to fix the attention of the pupil to these matters, and teach him to discriminate between what perhaps is intended to be hidden, and what can be explained and accounted for by the use of reason and intellect. We wish to do this in a way we conceive to be the simplest and most efficient, by a due exercise of his physical and intellectual powers, and to enable him to judge whether the theory he has been taught, at one time, corresponds with, and is confirmed by the practice he is engaged in at another; and further we maintain, that such a course of study and discipline, is best fitted to keep both body and mind in a healthy vigorous tone.

Messrs French & Heiser of Castle Garden, presented cuttings of the magnificent ivy, which now embraces the eastern gate and front of the castle. This celebrated vine, which is proof against all insects and all weathers, deserves to be genesally cultivated. Its druidical character and admirable duration, entitle it to our distinguished notice.

Park Fay, of Southboro, Mass. A letter from him on the successful mode of cultivating good potatoes by him, was read, and will be published in our next number.

A. B. Allen, presented a letter from James C. Lane of New-York, relative to a peculiar turnip, accompanied by a specimen which was examined by the club, and it was remarked that the taste of this turnip was decidedly more that of the cabbage than of the turnip. The specimen was perfectly sound, as if just taken from the ground. In size it is about as large as the very largest pear or apple and somewhat resembles a pine apple.

Grafts of the yellow pippin apple, of Isabella grape vines, the osier willow, the ivy, seeds of the cocoa-nut squash, the West India squash, the long ground (five or six feet in length,) of the New Zealand spinach, the cheese pumpkin, ears of wheat, Indian corn, &c., were distributed among the members.

The club adopted the subject of grafts, cuttings and seeds, for the next meeting, and then adjourned.

H. MEIGS, *Secretary*.

April 20, 1847.

Robert Lawrence, Esq. in the chair.

Mr. Meigs read the following translation made by him from the Revue Horticole:

Revue Horticole, Paris, 1847.

Growth of Potatoes in the earth without stalks or leaves.

Lefevre remarks that the winter culture of potatoes ought to attract the attention of the learned and the practical agriculturists to this curious problem.

Question.—Can the potatoes continue to grow in the earth when the vegetation of their stalks and leaves is suspended by cold? To this question practical men say there is no difficulty in this, for they find that the potatoes often develope in cellars and in the banks where they are deposited, young potatoes; besides, what are potatoes but swelled roots or stems?

Last year Mr. Francoeur gave a statement to the Royal and Central Society of Agriculture, of an experiment he had made after the method of Mr. Chaugarnier.

Potatoes planted about the end of August, gave him a crop at the end of the ensuing winter.

A discussion arose in the society on this subject, and it seems to have been agreed that these potatoes had in the spring, attained their full size.

Mons. Masson, in the experimental garden of the society, planted in August, 1846, the Marjolin potatoes; the growth of the stalks was very slow; at the time of hilling them there were no young potatoes. The cold weather having come, he covered the potato bed with dry leaves, and at that time the young potatoes were not larger than the finger's end Frost came on shortly after; the stalks were completely disorganized, but the vegetation of the potatoes in the earth, nevertheless continued. We recollect that Mr. Vilmorin proved the same facts twenty years ago, when he introduced the marjolin potato by the name of the kidney.

Mons. Naudin. Agriculture, is in our day, a very complicated science, borrowing for the most part from every other. Besides a knowledge of vegetable physiology which it claims imperiously from every one who takes that career; it also demands an exact appreciation of the different soils, of climate, of local circumstances which often powerfully influence the productions of the earth. We must understand the effects of various manures, what kinds of animal we ought to raise, &c., and in fact, in order to be a good farmer one ought to be a meteorologist, mineralogist, chemist, natural philosopher, and an economist. And it is to these grave and important questions, that the professor of the garden of plants at Paris takes such pains to call the attention of the people.

France, says he, is one of those countries in Europe which demonstrates best this great truth, that agriculture is a complex art. With her vast plains of the tertiary formation, her masses of granite mountains, her oceanic regions in the west, her oriental provinces participating in the continental climate of the centre of Europe, with such a varied mineralogical nature of soil, and above all, with her north and south regions, what a study does she present for the philosopher and for the learned farmer.

For some years past, some of our large proprietors and amateurs of evergreens, have endeavored to introduce into their plantations, exotic species, for the greater part originally from Mexico, Himalaya and California, among which we find many new pines and firs.

Revue Horticole, Paris, 1847.

Translations by H. Meigs, Secretary of the Farmer's Club of the American Institute, April 16th, 1847.

The Royal Horticultural Society of London, has joined to its magnificent garden, one institution of which the advantages cannot be disputed, that is, a library formed exclusively of books for the use of young persons who are destined to become gardeners. The Hall is tapestried with plates of national history, principally of botany and vegetable physiology. Dr. Lindley knows well the difference between an ignorant gardener and one well instructed, even when both have equal ability in practice. He insists on the necessity of the young people of the present generation possessing the greatest possible amount of general instruction. A school like this which will become the nucleus of complete horticultural education, placing within the reach of all our young gardeners, instruction up to the height of the intellectual wants of our epoch, should be placed in all our principal cities as well as in London.

Mr. Meigs, called the attention of the Club to a small Cactus, bearing a red flower, for the purpose of noticing the fact, that the red fluid, like blood, filled the main stem of the transparent leaf from the ground to the flower—resembling a vein or artery *gorged with blood*. He had never noticed this fact, nor read nor heard of it. The red color appeared to be formed at the root of the plant and then forced through this vein to the flower. He had heretofore supposed that the color of flowers and of fruit was formed on the fruit and petals of flowers by the influence of light and air—after the colorless material had ascended from the earth.

Professor Mapes, remarked at length on the means by which flowers received their coloring matter, and also upon the changes in the chemical character of starch and sugar when combined with an excess of oxygen.

Mr. Wakeman. The importance of the subject of potato disease, cannot be overrated. Apprehensions as to this falling off of the potato crop have been expressed some time ago. McCulloch adverts to it, saying that the potato crop sustains two or three times the amount of population, per acre, more than the grain crops.

Professor Mapes, reminded the Club of the prediction of Mr. Cobbett, some twenty years ago, as to the failure of potato, and the fatal consequences thereof. The Professor asked from practical men, what effect is produced by the application of pot ashes as manure for potatoes. The diseased potato is said to be deficient in this ingredient.

Judge Van Wyck. Ashes constitute a good manure, as is well known, but have not been found invariably to be an antidote to the disease. What are supposed to be antidotes frequently fail; lime is one of the recipes. I believe that the disease is owing to acid as in what may be termed sour soils, alkalies might neutralize this by neutralizing the acidity. From my observations, I think the disease has more frequently appeared in a wet season, and on a moist sour soil, than in a different season and soil, yet I may be incorrect.

Mr. Fay, of Southboro, Mass. We think in our place that the secret of raising healthy potatoes is in the application of salt. One of our neighbors, Mr. Sibley, takes 1 quart of fine salt, 4 quarts of plaster of Paris, mixes them well, then takes 5 quarts of wood ashes, and mixes them with the other mixture. He puts on each hill of

potatoes about one large table spoonful of this, as a top dressing, before weeding and half hilling, and a like dose after the second hoeing. He hoes the crop three times, after our old fashion of forty years ago. He makes large broad hills, he digs his potatoes late, when the ground is quite cool, November. I observed an excellent crop of mealy potatoes produced on a headland, on the north side of a wall. We think that the salt which we use in the top dressing, keeps down the ammonia which otherwise causes too great a growth of the potato stalks. Our soil is a yellow loam. Harry Hubbard, of our place, has cultivated a variety of potatoes, white, pinkeyed, and peach blow, the whites do not rot.

Mr. Hyde. What crop do you get?

Mr. Fay. Less than we used to have; we used to have a bushel from eight hills, but I think we lately get one from thirty hills, I do not wish to speak, however, of the amount of crop, because I am not certain.

Mr. Hyde. The potato crop has fallen off greatly. It is reduced to 80 or 100 bushels per acre. I used to have over 400.

Isaac Q. Underhill, of New Jersey. I used to have from 400 to 500 bushels of potatoes to the acre, now we get sometimes 40.

Mr. Meigs. Do you find any seed balls on your potato vines? I have last year examined some acres and found no seed balls on them. We used to be troubled in digging potatoes, with the numerous balls crushing under our feet in the rows.

I. Q. Underhill. I saw very few on my vines.

Professor Mapes. The top dressing, mentioned by Mr. Fay, would seem to indicate that potass was useful to potatoes, neither the ashes nor salt would tend to decompose the sulphate of lime, and probably the potass contained in the ashes is the only chemical agent contained in the top dressing. The salt, doubtless, prevents the too rapid evaporation of water, and the sulphate of lime prevents the soil from recompacting itself from the action of rain, as well as enabling the gases from the atmosphere to enter the soil freely from its remaining free and open.

Professor Mapes. French agriculturists have taken the pains to sift soil, and found that it was equal in the proportion of 1 to 10 to the

application of manure. The object in sifting is to divide the particles of soil perfectly, and thus let in the gases; plaster of Paris acts more mechanically than otherwise, it separates particles of soil from each other, but is not soluble in the soil.

Judge Van Wyck. The rot in the potato has not yet been so bad in our Eastern States as it has elsewhere. In this quarter the white and mercer potatoes have suffered the most virulent disease, many so putrid that they could not be removed from their hills.

Chairman. Last year the mercers planted, hardly returned the amount of seed planted.

Mr. Manice. I have the early sovereign potato; it is small, round, of a light yellow tint. I have raised them for the last three or four years, and have not had a rotten one among them, until last year, when there was one or two potatoes in a bushel, rotten. These potatoes are about the size of an egg, and gave me a beautiful yield.

I tried guano on one piece of ground, and the best of barn yard manure on the other. The potatoes manured with guano were fifty per cent. more in quantity, and better in quality than those with the barn yard manure. I pounded the guano, sifted it and sowed it in the drills, using 2 quarts of it in a drill 90 feet long, and then stirring the earth in the drill afterwards well with the hoe. I have now about 2 acres planted in the same style, only I used a hand cultivator, properly set, to stir the earth and guano in the drills.

E. H. Ely. I have raised potatoes for the last three years, soil light, put a table spoonful of plaster of Paris on each hill, planted one small potato in each hill, had no rot, never saw better potatoes than they were, had about sixty or seventy bushels an acre. They were of a good size, but a few in a hill, uniform in size nearly.

My farm is table land, about eight miles up the Connecticut river, from Long Island Sound.

Carrington Wilson, of No. 152 William street, New York, who has English seeds for sale, presented to the Club for distribution, seeds of Spring Tares, White Tartarian Oats, Black do, Hopetown do, Talavera Wheat, Lucerne, Long Red Mangelwurzel, Yellow Globe do, Red Globe do, Italian Rye Grass, Pacey's do, Trjlfolium Incarnation, Mixed Meadow Grass.

Several hundred grafts procured by a member of the Club, did not arrive in time for distribution from some cause unknown.

Mr. Wakeman proposed as a subject for the next meeting, Dairy Husbandry, and the continuance of grafts, cuttings, seeds, &c.

The Club adjourned to Tuesday next, at noon.

H. MEIGS, *Secretary.*

April 27th, 1847.

Judge Van Wyck in the Chair.

Mr. Lewis Seymore, of New York, presented marrow beans, a large and fine pod for eating when green. It has been for fifty years cultivated in his father's family. The beans are large, of a dark yellow, and are runners, requiring poles.

B. W. North, of Poughkeepsie, has them for sale in considerable quantity.

Mr. Meigs, read the following translation made by him.

REVUE HORTICOLE, *Paris, Feb.* 1847.

Translation by H. Meigs, Secretary of the Farmers' Club.

Mr. Lecoq. My *cowslips** are the product of a considerable amount of seeds which I sowed in 1845. The flowers of which bloomed from the month of November of that year until the end of May, 1846. The seeds were taken from about 1500 plants, of which about 200 were rejected. The rest of them showed but three beautiful varieties, among which I distinguished about one hundred and fifty out of the common style, and all of them as remarkable as those of which the present drawings are made. It was impossible to see at one view, a more beautiful sight than these presented to the eye when they were all in bloom in April. All the colors were there represented, all imaginable shades of color were there, and the size of the flowers was as astonishing as the variety of their colors.

I obtained these plants by hybridation, and their diversity was such, that out of the fifteen hundred it was almost impossible to find

*Primivexes.

two or three identically similar. Having been fortunate in obtaining in the preceding year some cowslips of the ombelle sort, entirely white, I made use of them to raise a seed or fecundating species, and thus I was enabled to enfeeble the deep colors of my flowers, and to vary many of them. Now, by hybridizing one with another, the numerous mongrels which I had formed, I arrived at infinite varieties, the end of which I could not foresee, and which could not have been created in forty years cultivation from the seed, without this powerful cross fecundation, first between the cowslips of our meadows and those with large flowers, and afterwards between the plants proceeding from these crosses. I am not acquainted with any plant, which for color presents so many varieties as the cowslip. It may be said to be of all colors from black to white, and among them are flowers bordered white or yellow, with stars and spots, and so regular that one would think that they had been executed with a pencil.

The flowering of this plant is one of the most beautiful spectacles presented to us of nature, in the vernal scenes of each returning year, when the cowslip is among the first to announce, as the messenger of spring, the return of fine weather.

Mon. Hardy, director of the nurseries of Algeria, says that the flowering of the Paulownia, there, is as much retarded as in Paris. He says that he has in the nurseries about 500 dwarf bananas, young and old, but has not yet seen their fruit. He attributes this to drought. The nurseries will deliver this year from 90 to 100,000 young trees. The culture of cochineal continues to prosper, and may be regarded as likely to be very productive.

Hovey's Seedling Strawberry.

I had a bed of the Hovey variety planted in November, 1844, just before frost set in. In the following spring, as soon as the weather permited, I made between the rows, a furrow about half an inch deep, in which I put guano and covered it with earth, hoping that the roots of the strawberries would reach it. I obtained a superb crop, which I attributed to the guano, considering the miserable barrenness of the soil on which I was operating.—*Naudin.*

April 27, 1847.

Annales de la Societe Royale d'Horticulture, Paris, 1846.

Translated by H. Meigs, Secretary.

On the importance for farmers of knowing the natural sciences, and having a habit of observation.

Numerous facts have convinced us that farmers would find very great advantage in acquiring a habit of making minute examinations of all those little incidents which they meet with at every step, in the history of nature, and which they often pass unperceived. It is greatly to be desired that they should not only read books on Natural History, but also examine attentively with their own eyes, everything which occurs in their gardens and farms, in order to collect useful indications from the very book of nature. In all schools—as well of girls as of boys—of the rich and of the poor, Natural History ought to occupy a most distinguished and useful place. There is hardly about us any *common plant or animal* of which what are called educated clean people, have any well founded knowledge, or about which they have not some entirely erroneous notions; and indeed the most complete education in youth only leads to every day observations and learning during a whole life. This is understood in Sweden and in Germany, especially in the interior States of the latter. There are schools in which are taught Surveying, *Culture of Forests*, Zoology, Botany and *Forest* Mineralogy. In one of the most celebrated schools in the world—that is Fellenberg, at Hopoyl, in Switzerland, the first care of the instructor is to persuade the pupils of the importance of *an attentive examination of the objects which surround them*, and which may be made use of in the arts or trades in which they may engage. That institution contains about four hundred and fifty scholars, *among which are many sons of peasants.*

At Carra, in the environs of Geneva, there is also an agricultural school, where the scholars, among other things, learn the botany of the common plants of the country—this is obtained by botanical excursions.

We wish that Mr. Drummond's benevolent idea would be carried into execution, viz: That each village should have a lecture room, museum, and library of useful books; geology and agricultural chemistry should enlighten our farmers.

When I had proceeded thus far in translating this article, which made me think highly of the good sense of France, I discovered that it was a translation from an English essay.—*H. Meigs.*

Mr. Meigs presented grafts of the fruit bearing paper mulberry, cut from the only two trees he had ever seen of the kind. He also presented Jesuits beans of Mexico, presented by the Rev. James Ryder, President of the College of the Holy Cross, in Worcester, Mass. This is a pole bean, pods a foot long, treated like asparagus in cooking, that is, bunched. It is a very small bean—also balsam apple seeds from Mr. Ryder.

Mr. Meigs presented turtle soup beans, much cultivated and esteemed in Mexico. These are black, and when made into soup with forced meat balls—thin slices of pork, having the rind on, resemble turtle soup—hence its name.

Nathan Hart, of Cornwall, sent grafts by Mr. R. C. Nodine, from a seedling apple, the tree rather under size, a good bearer, fruit of good medium size, late fall apple, has a delicious flavor in pies. They are best for cooking, although pronounced by good judges, excellent as a desert apple. Mr. Hart promises to send a box of the apples next autumn. We called it the Hart apple.

Roswell L. Colt, of Paterson—the following letters from him to T. B. Wakeman, were read:

PATERSON, April 23, 1847.

I wrote you some time ago, asking the American Institute, or Farmers' Club to have analysis of corn cobs, made both red and white, now there are all manner of opinions on this subject, I really think our friend Professor Mapes, when he says off-handed, they are of no value, jumps at his conclusion, unless he has analysed them.

I have tested coal tar for three years, with marked and beneficial effect to peach trees, and also to mountain ash, and a wash of whale oil soap, and as 1 of soap to 12 or 15 of water, to my fruit trees, and it would rejoice you to see the beautiful effect; as to bark, as to worms, or catterpillars, no such thing is to be seen on my ground.

I escaped the potato rot last year where I used no barn-yard manure, my dressing, which proved beneficial, was 1 of salt, 1 of plaster of Paris, 2 of charcoal dust, 2 of wood ashes, 2 of slaked lime,

and 10 of muck, that had been dug 12 months, crop not heavy, but perfectly sound, and fine flavored. I put them in barrels and filled in charcoal dust, and they are now as fine dry and mealy, as they were in November, and I have put in my whole crop this year with the same mixture. Perhaps the best way is to spread 10 bushels of salt and 40 of slacked lime broad-cast, to the acre, and then apply the wood ashes, say 10 bushels and 50 of dry muck, and 1 of guano, well mixed in the hills or drills. Let any one try this on an acre, and if he does not get 300 bushels or more of sound potatoes, I shall be greatly mistaken.

Your most humble servant,

R. L. COLT.

Dear Sir—You ask me about my opinion of dairy cows, to which I answer—do you want to inquire about milk to sell, if so, take Dutch or Holderness cows, that give you 20 or 30 quarts of milk for 300 days in the year, but if you want milk for yourself, take Alderneys, which give you 8 or 10 quarts a day of milk, richer than the cream you are in the habit of buying in New-York. For general purposes, I am inclined to think, that Alderneys, this side of the Alleghany Mountains, (except on some of our very rich valley lands,) is the best kind of stock for the farmer to keep, next to this Devons, pure North Devons, they are good for milk, good for beef, and the best of all working cattle, but for gentlemen give me Alderneys, one wants quality, not quantity. I tried short horns, but our Jersey lands would not support them, without too much expenditure, beyond grass and hay for grain, and I now confine myself to Alderneys for myself, to Devons and to Ayrshires, of which I have the pure blood, and which I mean to keep pure. I mean to raise enough pure Alderneys to supply New-York city with 100 or 200 cows a year, at $36 a year, guaranteeing to give a fresh Alderney whenever the one on hand does not give 6 quarts a day, recollect then 6 quarts are not 6 quarts of milk, but really 6 quarts of cream; instead of 6 I think I will be willing to guarantee 7 a day; now any one that wants a cow had better give me $40 a year for such a one, than buy a common one for $30 or $40, and sell her again, when dry, at $10. I have just desired Mr. Colman to purchase for me, the best pure bull and cow of the Alderney breed, he can procure in the Island of Jersey, where the best come from.

At present I have the purest and largest breed of Alderneys in this country.

I am truly sorry I cannot send you any grafts or grape vines. I have given many away, and my grape roots are all in the ground.

Your most humble servant,

R. L. COLT.

Mr. Wakeman. Let us take up the regular subject, Dairy Husbandry, as soon as we can.

Elisha Tyler, of Detroit, offered some remarks to the Club.

Oliver Smith. In relation to the subject of analyzing corn cobs, in order to obtain a knowledge of their nutritive qualities, I propose a direct method, and that is to feed animals on the ground cob, by which we shall decide, in a manner which no chemical analysis can approach, the question of their qualities; we well know what the corn does in fattening the animals.

H. Meigs. The dairy husbandry is an important subject; who does not know the great differences in the qualities of milk, of butter and of cheese. We once paid four and even six shillings a pound for English cheese; we now make as good here for one shilling. Let our practical men speak and tell us all how it is done.

Mr. Pike, of New Jersey. Much has been said about corn stalk fodder for cattle; practice and theory in this matter do not well agree. The practice has been very generally to sow the corn broad cast. I have found that the stalks in this method become deficient in quality, they are too aqueous (watery) and do not condense their juices. When sown broad cast there is no such thing as cultivating them. I recommend sowing in drills, some eight inches apart; they may then be cultivated, and they acquire firmness of constitution, I tried to cure these young corn stalks for fodder, I exposed them for a week in the field, I gathered them and set them up against my fences, I then stacked them, but found in a short time, that they heated in the middle of stacks. Those sowed in drills were nearly double the size of those sown broad cast, and were much more nutritious and cured much better.

Mr. Abraham Wakeman. I hardly need speak of the importance of dairy husbandry, so much bad butter, bad cheese, and all so badly kept, find their way to our tables, that great amendment is extremely to be desired, and by strictly following right instructions, all may be greatly improved. I have in former years been conversant with this matter. I have milked from fifteen to twenty cows a day, and

watched the processes of the dairy attentively. Cheese making has lately been materially improved *by the use of steam;* we have improved our travel in steamboats and railroad cars by steam, and *now use it in making cheese!* In making cheese in Herkimer county, we used a wooden tub about three or four feet in diameter, 18 inches high, to receive the milk from the cows. These are milked at 6 o'clock in the morning, and at 6 o'clock in the evening, the cows being in their respective stalls or stanchions. The milk is passed through strainers into the tub, and then covered with a very clean cloth; we fill large pans partly with cold water from the well, put them in the tub to float, this keeps the milk cool. Two milkings are to be put into the tub, making about two barrels of milk. Cleanliness is of the utmost importance, everything about it must be perfectly clean and sweet; pails &c., cleaned and scoured and hung out on the fences to dry. The tub, which is moved on wheels, is drawn near to the cauldron kettle, the milk put into it is heated to eighty degrees of Fahrenheit. As to the rennet, out of 150 cows we could not afford to raise all the calves, therefore, take some of them when about two days old, with their stomachs full of the milk, and kill them in about one or one and a half hours after the last sucking. This delay lets the gastric juice perform its office in the calf's stomach. The rennet (the stomach) is then taken out, with the curdled milk in it, and is put in a jar with salt, the liquor produced in this way is then used. Take a pint of it and add it to the scalded milk in the tub, stir all thoroughly, and cover over with a perfectly clean cloth for an hour. By that time the heat will be reduced twenty or twenty-five degrees, and a fine curd will be formed. Then use the hand or the curd cutter to stir the curd well. The whey now separates from the curd. Put the whey into the cauldron kettle, heat it to 96 or 100. The object of this is to scald the curd by pouring this hot whey on it. The whey is often separated from the curd by injudicious methods. One has been to lead it off by a pipe to a piggery not more than fifteen feet distant, thus giving the stye flavor to the cheese! The stye ought never to be nearer than one hundred feet. The curd is then put into a tight box some four feet long by two and a half feet wide, and about nine or ten inches deep, we call it a sink. A large strainer is then placed in this sink, supported properly by lattice work. Into this strainer put the curd, and then the whey runs off through a hole made for that purpose in the bottom of the sink. Then work the curd, break it up as fine as possible, stirring it well, then it is ready for the salt. If the curd is very dry, add from three to four pounds of salt, for a sixty pound cheese. If it is moist, add from four to four and a half

pounds of salt; we use Onondaga salt, costing about 9s. 6d. a barrel generally. After salting, mix all thoroughly, and the curd becomes light and lively, and when squeezed by the hand, expands when the hand is opened, like a honey comb. It is then pressed in the sink by what we call a follower, a thick plank with a cross piece on its back—men sometimes stand on this follower. Thus the whey is pressed out. Then comes the cheese hoops, some 18, 22 or 24 inches in diameter, and 8 to 11 inches high. We put the curd in these, and on the top comes a follower which fits the cheese hoop, and on this comes the pressure. For that purpose there has been invented a self-pressing cheese press. This requires no help, for the weight of the cheese is the pressing power, which is regulated by the increased or diminished length of a lever. After pressure for 12 hours, we turn the cheese over, then the rims squeezed out by the pressure are pared off, and these are eaten with high relish. Press the cheese twelve hours more, and then take it to a warm room, say about 80 degrees. Now comes another operation.

The whey which has been left in the tub before mentioned, has on its surface by this time an oily matter, called whey cream. Take this off with a skimmer, and use it with perfectly clean rags to rub the cheese hard all over. Once a day for three weeks at least, and four is better still! This keeps all flies and insects from depositing their eggs in the cheese. The shelves on which the cheese is put must also be rubbed with this whey cream. If no cream has been taken from the milk, the cheese is (as is said) apt to run in hot weather, that is, to bulge out or spread at the sides, this is attributed to richness. Next bandage cloths are to be used; these cost about seven cents a yard, and are used to bind the circumference of the cheese. This bandage must then be thoroughly rubbed with the butter of the whey cream. Making cheese at eight cents a pound, is rather more profitable than raising grain for market, but at anything less, little if anything better than a grain crop. What I have stated is the old method of cheese making. There are now two improvements in this business; they consist of a method of heating the milk and the whey by means of a stove and a new fashioned tub. A tub with an iron bottom, placed on rollers, contains another tub or tin can, of a less diameter by some three inches. This apparatus is readily moved with the contents over the stove—the heat is communicated to water contained between the tub and inner can or tub, thus there is no danger of burning the milk and so spoiling its flavor. A machine for cutting up the curd fine has been invented, and is now much in use. It is an apparatus which contains small

knives about half an inch long, formed of nails by filing or grinding them. These are made to revolve; they commence at the bottom of the curd and gradually ascending to the top, cut the curd very fine. I speak of cheese making in Herkimer county.

Charles Henry Hall. What causes the cheese to run as you term it? Is it not fermentation in the cheese? You say it is the richness of the cheese which produces that effect.

A. Wakeman. If whey is left in the cheese as is often the case, then probably fermentation will produce it.

Mr. Hall. The Stilton cheese is nearly all cream, and is made in small sizes. Parmesan cheese is scalded hard. Many of our farmers scald their cheese too hard, it is a bad practice.

Chairman. The reputation American cheese has acquired within a few years in England, is no doubt owing to the improvements in making it in Herkimer county and elsewhere.

A. Wakeman. There is a strong spirit existing in Herkimer for improvement, and the Herkimer farmers do not conceal their knowledge; they communicate freely to all men. The rennet is separated from its curds, stretched by strips and dried, and may be kept fit for use any length of time.

D. Jay Browne. In England rennet skins are commonly kept for three or four months before they are used. They are deemed better with age. If used in a recent state, they cause the cheese to be filled with small cavities or cells. These *skins* before they are dried, are often flavored with lemon juice, or aromatic herbs.

Mr. Tyler. My mother used to dry the rennet, curd and all.

Mr. Hall. It is of no consequence how old the rennet is, if it is kept perfectly dry. They often add to it herbs to give flavor, such as roses, lemons, &c.

A. Wakeman. No Turk's Island salt is used in Herkimer; it costs too much there.

Mr. Hall. There is no bittern in the salts of Turk's Island, for there it is cured by the heat of the sun. But when there is bittern in the salt used in making butter and cheese, there cannot be that fine high flavor admired in the best butter and cheese.

D. Jay Browne. Rock salt is still better than the Turk Island.

Dr. Henry A. Field. Much has been said here of late, on the interesting subject of an Agricultural School and Experimental Farm, I have just received a letter from a young gentleman, of the most respectable parentage, now about twenty years of age, who has received such an education as is contemplated by the American Institute. Dr. Field then read a letter from Burlington, in Wisconsin.

R. L. Pell, of Pelham, sent to the club grafts from his fine Newtown pippin apples.

Henry Kidd, of Westchester, presented grafts of the Seek-no-further, and of the Swaar apples.

Mr. Meigs, presented grafts from the fruit bearing paper mulberry.

The distribution of seeds and grafts was as usual an agreeable affair, such is the excellent and increasing taste among our citizens, for the improvements in all agricultural products.

The club adopted for the next meeting the Dairy Husbandry continued, and seeds, grafts, &c.

Adjourned to Tuesday next, the 4th of May, at noon.

H. MEIGS, *Secretary.*

May 4th, 1847.

Col. Edward Clark in the chair.

Mr. Meigs read the following paper.

AMERICAN INSTITUTE, FARMERS' CLUB, }
April 29, 1847. }

This quarterly contains a large amount of observation on the Potato Malady, comprising 120 pages, from which the following extracts are taken.

Agricultural Society of Inverness—Report.

"Whatever may be the nature of the affection which has overtaken the potato it does not seem to be confined this season to that crop.

The beans have had their leaves blackened, and their stems shrivelled by apparently the same cause; and the rotteness in the turnip may safely be ascribed to the same influence. The products of the flower garden have not escaped the affection, for the leaves of the Peony seem to us to have suffered from the same cause. Even forest trees are affected, as the appearance of the Balsam Poplar sufficiently indicates. And wild plants have been observed to suffer in a similar manner, as in the common Fern. So far as we can discern, the mysterious cause of this universal affection is very much "like the pestilence that walketh in darkness, and that wasteth at noon-day."

SPECIFIC MANURES.

1st. Every description of crop requires an ingredient essential to its production; and without it, such crop cannot be raised in perfection.

2d. If soil does not contain in itself what is essential to the growth of the plant upon it, it must be supplied through the medium of one or other of the specific manures.

3d. The essential substance necessary to be added to the soil may be discovered by consulting the nature and properties of the plant to be raised.

THE POTATO.

Little information is communicated regarding the flowers, which had generally decayed in the natural course before the disease had extended itself. With respect to the appearance of the stem and foliage, the reporters all concur, though expressing themselves differently, in describing the leaves as presenting the appearance which they generally do, after having been injured by severe frost. In many cases the disease was observed in the tubers, while the growth of the foliage was unchecked, and its appearance unchanged; and in many it was virulent where the stem and leaves appeared the healthiest and most luxuriant. Statements to this effect will be found in the Appendix, from sixteen observers.

Repeated statements are made of good and healthy tubers being found in a mass of rotten ones.

It is an almost universal opinion that the disease first appears in the stems and foliage of the potato, where it is indicated by the growth of certain Fungi; but the experience of the present year will

perhaps lead us rather to the conclusion that the disease is deeper seated, and first appears in the root.

On examining the growing plants, the principal or tap root, it is believed, will always be seen to be affected, and this, often before any symptoms indicative of it, have appeared in the stems and foliage.

The taint will be seen extending along the connecting rootlets to the tubers, and this while the stems and leaves are growing luxuriantly, and are free from any perceptible taint, when all at once, the disease reaching the part of the plant above ground, the leaves exhibit the symptoms now so well known. If it should turn out that the disease first appears in the root, we can hardly expect that many of the remedies proposed, as sprinkling the growing plants with lime or other substances will be of use, and it will then also be probable that the cutting over of the stems acts only as a palliative by arresting the progress of vegetation.

ARGYLSHIRE.

We are an exporting district, and on inquiry I find that about 9000 tons of potatoes are annually shipped to Liverpool, Glasgow, and occasionally to Ireland, from five parishes. Those potatoes which have escaped the disease are of excellent quality.

The seed heads of the potato are now rarely formed.

The disease is to be ranked with cholera among men, and murrain among cattle. The chief lineament of its character is independence of action; and that action of the most erratic description. If it seized this neighborhood, it passed over that; only, however, to attack another. For another year's crop we must look for healthy seeds, good manure, and a careful separation of the tubers to be planted.

Generally, the newest and freshest varieties have been least affected, and the old cultivated varieties the most.

For ten or twelve years past it has been rare to see a field of potatoes exhibiting any quantity of flower.

I. Stewart Hepburne, of Colynhalzie, Crieff. The potato as originally brought from Virginia by Sir Walter Raleigh, is stated to have been of a watery or waxy nature, and of a small size, little larger than a walnut. In Europe, for a period of two hundred years, it

has been subjected to our artificial process of high culture, with much manure, which has generally changed its chemical and structural condition. By this artificial forcing in higher conditioned land, it has been vastly increased in size, and the relative proportion of its constituent principles altered. The proportion of its starch and sugar, both absolute and relative, have been very greatly augmented, and that of its gluten, as I conceive, proportionably diminished.

The potato is an exotic and tropical plant, and although it has been long acclimatized, we know in practice that it is a delicate esculent, requiring a great deal more care in its cultivation and preservation generally, than it has received.

The wearing it out theory is not well established; although no inconsiderable amount of learning has been brought to bear upon it. Raising potatoes from the seed or apples, however, is said to have driven away the curl in some parts of the country forty-five years ago, and quite coincides with the propriety of a vigorous trial being made; to raise potatoes from the healthiest seed, notwithstanding those raised from the seed in this part only a few years ago, as well as in other parts, has equally failed with the long cultivated varieties, from all accounts I can learn. To imitate nature as far as practicable, in raising potatoes for seed, is of vital importance; and planting shallow on the flat surface would appear to comprehend this principle.

No difference between those raised from seed and those from tubers.

Some years ago we got a few seed potatoes from Mr. Bruce, tenant, Greenknow, Berwick, they are known by the name of "Jacob's cattle," which had been planted by Mr. Bruce and his father, during the last eighty years, without one solitary instance of failure, and last year the crop was perfectly free of disease. From repeated experiments in the last five years, we have found that though old and long cultivated varieties, have been less subject to failure than the new varieties raised from the apple. In point of fact, until we began to raise new varieties from the apple, such a thing as failure or disease was never once heard of!

Potatoes planted early so as to be ripe by the last of Juy, all perfectly sound.

About eight years ago took it into my head that the failure was owing to the potato having been so long planted from tubers, and I

set about raising them from the seed. I succeeded in raising a very great variety, but selected one I considered far superior to the others, and got a stock from it. I had more failures from this stock than any other.

Late planted potatoes have escaped disease.

The great mass of authority goes to establish, that no modification of the disease was observed to result from the condition or kind of manure, and that it manifested itself to an equal extent, and with equal virulence, under all applications, whether of common manure, or what have been called special manures. This information is from the most experienced, practical farmers of the country.

The more richly manured, the greater the disease.

That the disease was as prevalent on newly cultivated as on old cultivated lands!

The higher the cultivation, and the richer manured, the greater the disease.

On the estates of the Duke of Montrose, potatoes on the north side of a hill all sound; on the south side all unsound! culture, &c. the same on both sides of the hill.

Horace Greely presented a specimen of marl from the farm of Aaron Stafford, of Sangerfield, in Oneida county, for examination.

Professor Mapes. The faculty of the Institute will examine it.

Alexander Walsh, of Lansingburgh, transmitted a communication to the Club, from the London Spectator, on model farming in Ireland and Scotland.

Hon. Wm. Terrill, of Sparta, Georgia. The following communication was read, and the cuttings of the Warren grape distributed among the members of the Club; and a committee appointed, consisting of Charles Henry Hall, Professor James J. Mapes, and General James Tallmadge, to examine and report upon the specimens of wine sent by Mr. Terrill.

Pleasant Valley, Hancock Co. Ga. }
November, 1847. }

Doctor Wm. Terrill, Sparta, Hancock Co.

Dear Sir: Some of the gentlemen in New-York with whom you have been made acquainted during your late sojurn there, may be curious to know something in reference to Georgia wine, and the mode of making it. As soon as the wine made last summer is ripe enough to draw into bottles, I will send you a bottle of the Warren Grape Wine, which is very similar to Malmsey, also one bottle of Champagne, made from the scuppernong and muscadine. The scuppernong makes a fine still wine like the muscat. I have no doubt from the experiments made, that in time very excellent wine will be made in Georgia and the middle states, preferable, indeed, to any imported wine, because here may be had the pure juice without mixture.

Wine can be made in small or large quantities, from a bottle to a butt, or one gallon to thousands—the attention and trouble of making a single bottle, is as great as that of making a hogshead.

To make wine in small quantity, gather the grapes when fully ripe, pick off the ripe and sound berries, put them in clean earthen vessels or buckets, then mash them with the hands, then place the mashed grapes into a five or ten gallon keg, the upper head being open, having a hole and spile at the lower edge, cover the top with a cotton cloth or with a board, throwing a cloth over it to prevent the intrusion of flies or other insects, let it remain twenty-four to thirty hours, examine it before the termination of twenty-four hours, and when the fermentation assumes a conic form or swelling towards the centre, it is then time to draw it off from the keg, into an open vessel or vessels, which must be perfectly clean; then measure the juice and add to it one, one and a half, or two pounds of clarified muscovado sugar to the gallon, stir it and pour it into jugs or demijohns, but whatever vessel it be put into, must be filled to the brim, place a piece of cotton or linen cloth over the bung and a small pebble on that—examine it every two or three hours, the first second and third days, during which time it will ferment with considerable ebulition, and must be filled frequently (five or six times a day) with some of the must or juice to be kept in bottles for that purpose, useing one bottle at a time, and keeping the other bottles also full—after the third day, the jugs will be required to be filled twice or thrice a dry, and after the first week, only once every day, until the fermentation subsides, which will occupy three weeks or more—then cork the jug or demijohn lightly, and examine it occasionally,

if any effervescence or hissing recurs, remove the cork and replace the cloth, and keep it full with the must kept in bottles, or with sugar and water, if there be no must left, until it becomes still, (hence it is called still wine,) then cork it tight, let it remain six or twelve months, and when it is drawn into bottles, place thin flannel or linen over the funnel, so that the wine may pass clear into the bottles, which must previously be well cleansed, and before filling must be rinsed and turned down in a basket to drain. If desirable, one desert-spoonful or one tablespoonful of good Cog. Brandy may be thrown into each bottle previous to filling, to neutralize any drops of water remaining, and to give flavor to the wine—cork tight with new corks, and lay away in a warm dry place to mature.

Observe particularly, that if the fermentation goes on beyond a certain point while in the must, it will turn to vinegar, so it is best to draw it from the must an hour or two too soon, than ten minutes too late. It is also liable to sour if the demijohn is not kept full to the brim during the subsequent fermentation, if a vacuum is left in the vessel admitting air, it injures the quality of the wine, if it does not turn it sour.

Directions for making Champagne Wine.—Some grapes are better for champagne than others—the scuppernong is best adapted for it—the muscadine also is very good, by taking off the skins after the grapes are mashed, the skins containing the coloring matter not being suitable for this kind of wine. The process of making is precisely as the former, with this difference, that it must be bottled off during the process of fermentation,—from fourteen to sixteen days (in this climate) is the proper time to draw it off, and bottle it—cork with new corks, leaving the space of an inch or more between the end of the cork and the wine, wire and seal the bottle, and keep them in a cellar or cool place, it will be fit to use in six months.

How to make Wine in large Quantities,—Gather the grapes when ripe, and if there be time and help to do it, pick out the rotten and green berries if any—throw the bunches of grapes into a trough, tramp down or press them moderately, too much pressure may extract some juice from the bunches or crush the seed, which will injure the quality of the wine—draw the juice immediately, place it in a vat or large vessel to ferment twenty-four hours, then draw it out, add the sugar and put it in casks, keeping them full to the brim or bung until the fermentation is all over, then bung tight and leave to mature.

After drawing the must from the wine, the remaining matter will make good vinegar by adding water enough to float the mass, and leaving it open to admit the air while fermenting, in five or six days or longer, draw it in casks or demijohns, and lay it away in a warm place—it will be fit for use in twelve months or sooner, and of excellent quality.

The quantity of sugar must be regulated according to the saccharine matter contained in the grape, as for example:

Ripe Warren grapes with one pound of sugar will make something like Madeira wine, by adding one gill or more of cog. brandy to the gallon of wine; with one and a half to two pounds of sugar, it will make good Malmsey, with a dessert-spoonful of brandy to the bottle, or it will keep without any brandy with that quantity of sugar.

Scuppernong requires two pounds of sugar.
Muscadine do do

The bottle champagne, I think, from the imperfection of the corking may be sour.

Yours respectfully,
D. PONCE.

The following letter from Geo. Seaborne, to O. R. Brogles, president of the South Carolina Agricultural Society, was then read:

February 10th, 1847.

Dear sir:—I received the communications you sent me from Mr. Skinner, and have given the subject an attentive consideration. It is as he remarks, a matter of the most profound astonishment, that the first of all interests, the one which forms the basis of individual and national prosperity, and even existence, should have been so long neglected, overlooked and despised, and left to grope its way through the dim and flickering lights of experience alone, unaided by science, or the most trifling contributions from a National Legislature, which, during the whole period of its existence, has been so lavish in its expenditures in favor of other and inferior interests, as to have destroyed the great principle of equal rights, and endangered the perpetuity of the Union.

This total neglect of the rights and interests of agriculture, is at war with the principles of reason and common sense. In the ordi-

nary concerns, whether of individuals or of nations, matters of the highest importance are first attended to, and all other interests in the order of their relative importance. But our government has pursued a course in direct opposition to this self-evident policy, by sustaining interests of secondary consideration, to the neglect of the one that is of paramount importance, and from which all others proceed.

Two causes appear to me to have co-operated mainly in producing this extraordinary state of things: first, the ignorance of a great majority of the transcendant advantages which the lights of modern science have thrown upon our pathways; and secondly, that controlling and deluded attachment and admiration for the so-called learned professions, so common in the United States. Presenting a broad avenue, and one of ready access to the greatest profits and the highest personal distinctions, a great majority of the young men of genius and enterprise in this country have embarked in the study of law or physic, to the almost total neglect of the more profound practical learning derived from the study of the natural sciences.

But I do honestly believe that the magic influence by which empty professional titles have enchained the admiration of mankind, is gradually giving way. That the star of their glory so long in the ascendant, is destined ere long to wane towards the horizon. That the lights of science, diffused as they are likely soon to be, will enable the great body of the people to pierce the veil, and oppose the fraudulent pretensions of this self-constituted aristocracy, with as much certainty as they now do those commonly prefaced to the label of a quack nostrum.

The day I trust, is not far distant, when agriculture and the mechanic arts will be taught as sciences by learned professors, as Latin and Greek now are, at the public expense. Illustrated by the lights of Natural Philosophy, Chemistry, Geology, Mineralogy, Animal and Vegetable Physiology, Civil Engineering, Rural Architecture, and practical Surveying, its votaries must take rank with the literati of the age, and prove themselves capable, with such advantages, of increasing the knowledge of mankind to an almost unlimited extent, in the great business of supplying food and raiment for the human race.

Nathan C. Ely, of Williamsburgh, L. I. A communication from him was read, liberally offering, gratuitously, the association, 500 bushels of pulverized charcoal, for the purpose of testing its value in agriculture, and a vote of thanks from the club was unanimously offered.

Mr. Wakeman. What we have heard read to-day in confirmation of our own judgments, in reference to the high importance of the new system of education for farmers, which we so earnestly desire and expect from the enlightened liberality of our State, gives us the most grateful hopes of its speedy operation and success. From the Agricultural School which we wish, scholars will go forth so accomplished in all the science and practice of agriculture, that it is deemed probable that many of them will be employed on a great scale, as engineers now are, at compensations of several thousand dollars a year, to direct and manage great agricultural operations. Our school and farm will be at one shilling distance from this city will be visited by vast numbers of people, and prove one of the most attractive scenes within our reach.

Chairman. I invite the attention of the club for a moment to the benevolent act of our national government, in permitting one of the members of this club, Commodore De Kay, to command the frigate Macedonian, on a voyage to Great Britain and Ireland, loaded with a charitable cargo of food for the unfortunate people of those countries, great numbers of whom are perishing with famine. I move that a committee of this club be appointed to use all proper efforts to aid in filling the Macedonian as soon as possible with provisions, and save the gallant and generous Commodore from great loss and disappointment.

Judge Van Wyck. I think that the public need only to be awakened to this interesting effort.

Mr. Meigs seconded the motion for a committee, to adopt the best mode of aiding in this humane effort, and wished a committee of three, that it might be quick and effective.

Mr. Wakeman preferred a larger committee.

Judge Van Wyck also.

The following members were then unanimously appointed a committee for the purpose: Col. Edward Clark, Judge Van Wyck, Mr. Hyde, J. D. Williamson, Dr. Field, Dr. Underhill, and Gen. Chandler

Chairman. Our regular subject is Dairy Husbandry.

Chairman. I will offer a few remarks on the regular subject: In the United States patent office, there may be said to be *a thousand and one* churns for making butter; almost every county has its peculiar churn. I present a very simple method of making butter. It consists of closely woven or twilled cotton cloth, wetted and placed over a vessel; into this cloth cream is poured and left for several hours, during which time the buttermilk percolates through the cloth, so that all that is then necessary, is to knead or work the butter, to expel the remaining buttermilk. If the cloth should not be close enough in its fabric, double it.

Gouveneur Morris desired the opinion of the club as to the best mode of cultivating millet.

Theodore S. Gold, one of the principals of the Green Hill Agricultural School, in West Cornwall, Conn., remarked that millet planted in drills, produced large crops of seed, but when tried broadcast, the growth was less and the seed little, and of that most part dropped from the ears. It attains about three to four feet in height, and will prove as heavy a crop as hay.

Mr. Gold presented a catalogue of the Green Hill Agricultural School, at West Cornwall, in Connecticut.

Mr. Elisha Tyler, Esq., of Detroit, was introduced; and at the request of several, remarked as follows, in relation to the soil climate, &c., of Michigan:

That part of Michigan which lies between lake Superior, Michigan and Huron, called the Upper Peninsula, with its adjacent islands, contains more than twelve millions of acres, being nearly three times as large as Massachusetts. The waters of its lakes as transparent as the ethereal heavens, and climate cold, will undoubtedly insure it, even to be free from the bilious diseases so prevalent among all the more southern regions, while its interior continental position, will equally favor its exemption from the consumptions incident to the borders of the Atlantic. For agricultural purposes, it would not suffer by a comparison with an average of Northern New-England and New-York.

The soil and climate both improving as you proceed towards the southwest end of Lake Superior, in many, the soil appearing as well as could be desired, bearing unequivocal testimony of future agricultural wealth. Hard maple groves, equal to any elsewhere to be

seen, abound, interspersed with yellow birch, hemlock, pine, cedar, fir, &c., abundant for the future wants of the country, and to spare. In the lakes, white fish, trout, and siskowet abound, and the speckled trout in the streams.

But the grand object of attraction to adventurers, and which gives a value to all others, are the rich deposites of mineral wealth, exceeding any found of a like character since the opening of the mines of Mexico and Peru.

The mineral range commences about one hundred miles west of Saut Ste. Marie, and extends to the west end of lake Superior, though a great portion of it is so deeply covered with soil as to conceal the mineral. Isle Royal, forty-five miles long, also abounds in minerals. Near the east end of the range, it is said that there is iron sufficient to supply the world during all future time.

The lobes or veins of copper, extending through the hills, cutting them in a vertical direction, require a persevering application of labor, and more time to enable us to fully appreciate their value. As to this value, I am aware that various opinions prevail in the community, but among those who have made personal and extensive examination, the unanimity is nearer perfect, than on any other subject so little tested.

As to facts, it is well known that copper abounds, and that silver and other metals and minerals are present in promising as well as in profitable quantities. A letter received in this city last week, reads, that it is not exaggerating to say that in the Boston and Pittsburgh mine, a thousand tons of native copper, can now be seen at one view. The only trouble is, how to get the large masses out of the mine. At the Copper Falls, a piece of fifteen tons has been recently cut up at a comparatively trifling expense, thus leading us to believe that even these immense masses must yield to the perseverance of Yankee enterprise.

The manager of lake La Belle Mine, under a special contract for that purpose, is intending to divide $25,000 from the present year's mining, without a doubt of success, unless disappointed by contemplated smelting operations. Recent partial reports from various other working companies, show that like profitable results may be expected from them. Mining, previous to last summer, has been confined to Kewanaw Point, and since then operations have been

extended to the neighborhood of Ontonagon river, and the Porcupine mountains. Though the Kewanaw mines are undeniably rich, the latter will challenge comparison.

Owing to the Presidential veto of the mineral land permits, and of the failure of the mineral land bill last summer in Congress, it is well known that the value of lake Superior copper stocks went down in the estimation of the public, many supposing the whole matter one of the humbugs of the day, withdrew their confidence therefrom, but the recent action of Congress, in providing for the sale of the mineral lands to occupants, has restored that confidence in the minds of all who are informed on the subject, and measures are now being taken to increase the mining force largely beyond any former year.

The government of the United States, acting as the sole owner of some twenty or thirty millions of acres, bordering on lake Superior, in justice to the people, as well as to its own pecuniary interest, ought immediately to make liberal appropriations of land, to construct a canal at Saut Ste. Marie, and to make a road from Copper Harbor to Green Bay, and another road the whole length of the Peninsula, connecting Saut Ste. Marie and Machinaw, with the head of the lake and the Mississippi.

Surely no individual of common sagacity, owning that property, would hesitate a moment in the appropriation.

The reflecting people of this region being aware that no community ever did, could or would enact and administer laws to the satisfaction of another people, and being also aware that this Peninsula is but about one half as large as the lower, in the affairs of government, is destined ever to be in a *hopeless minority*, with a radical difference in pursuits, productions, and interests, as well as a complete separation of territory, will soon wake up to the importance of early measures for the erection of the State of Ontonagon.

As it is admitted that all legitimate government is instituted for the people, it is presumed that no reasonable objection will be found or urged against this measure.

General Tallmadge. Before the adjournment of the club, I desire to bear my testimony to the intelligent and able character of the report of the Hon. Nathan Burchard, which has been read to-day. I feel a particular anxiety that this occasion should not pass without some effort to second, to sustain the high and noble ground which

the honorable chairman of the committee has taken in this report. Four fifths of our people are agriculturists. All the institutes of our country have their support from the agriculturists. Yet agriculture has always been neglected by governments! We have passed through what may be termed ages of military glory, rapine and murders; through ages of superstition, monastic ages, and throughout all these, the common welfare of mankind, especially as dependent on the mighty resources of agriculture, have always been neglected or contemned, which special objects have absorbed the care and consumed the treasures of governments. We now have the sciences among us, but we do not diffuse them among men. Science teaches us the operations of light in the growth and the varied beautiful colors of plants and flowers, as well as unpracticed and generally unknown methods of producing abundant productions from our soil. And let me say that the age we are now in, is comparatively one of peace, one aiming at an accumulation of human happiness, to increase and vary production, the very substratum of public and private happiness, and prosperity. Our plan of agricultural education does not propose to make hermits, but to prepare young men for every vicissitude of life. Our common schools ought to contain the best books on agricultural subjects, and the instruction ought to be made thorough and practical.

Mr. Wakeman. Proper instructors are needed for our common schools, in the art of agriculture; such instructors are yet to be found by such a system as we now expect to establish.

Gen. Tallmadge moved that a committee be appointed to whom shall be referred the report of the Hon. Nathan Burchard, to consider and report to the club what is necessary and proper to be done in aid of the great object of that report.

The club appointed on that committee, David Brush, John L. Hyde, and Gen. Chandler.

Subjects for next meeting:

First, Dairy Husbandry, before all other subjects; next, Millet, its culture.

The club adjourned to 3d Tuesday of May, 1847.

INSTITUTE ROOMS, *May 11th*, 1847.

Mr. Meigs. Mr. Handcock presents a published account of the experiments made in the culture of the potato, by M. Zander of Boitzenberg, for six years past.

Translation.

You are desired to address your answer under cover to Mons. the Minister of Commerce and Agriculture; address on the second envelope, Messrs the Members of the Royal and Central Society of Agriculture, Paris.

Royal Central Society of Agriculture, Paris, March 10th, 1847.

Mr. President—The society has received indirectly, printed documents, containing details relative to the peculiar alteration in the character of the potato, in 1844, in some parts of the United States. These reports have been very useful to us in our own researches on the same subject in France, and we now desire to obtain all your reports on this subject for the last two years. I therefore pray you Mr. President, to have the goodness to address to this society, all the information which you have been able to collect on this subject in 1845 and 1846. You will doubly oblige me by transmitting such documents as promptly as possible, and with all that detail which is so desirable, whether in manuscript or published form. This may be done with certainty and celerity through the medium of the Consular Agency of France in the United States, and Mons. the Minister of Foreign Affairs.

Professor Mapes. The iron plough has not been in use more than eighty years. Had our government given a premium worthy of the object, say one thousand dollars years ago, great advantages to our crops would have been produced. An estimate is easily made by noting the vast amounts of our crops, and admitting that only one or a few per cent was made. Thus in 1817, our agriculture was worth $658,000,000. In 1846, Indian corn was 600,000,000 of bushels, which at 50 cents a bushel, is $300,000,000. Now if a Home Department for agriculture, as Washington earnestly recommended, had existed, and by its action an improvement of only one per cent on the crops had been obtained, the country would have received a benefit of probably some fifty millions of dollars a year. Ten thousand dollars a year distributed properly, would have produced such a result. But our government has not as yet directly appropriated a solitary dollar.

Professor Mapes. The Egyptian corn which we have distributed here, grown in our vicinity, was found in an Egyptian Mummy of a dog which was opened at the University. This mummy had been in the tombs for some thousands of years.

Oliver Smith. There is yet no definite conclusion as to the potato malady. The subject of electro culture has been mentioned, as adverted to by Professor Towers. He begins to perceive what has been familiar to me these ten years past. The world is on the eve of a greater discovery than has ever yet been made. Mr. Smith proceeded to speak of two Electricities in constant action, the cause of all phenomena, and uncaused.

Robert Lawrence, Esq. The following letter from him to Mr. Secretary Wakeman, was read, and was heard with pleasure, owing to the most agreeable experience of the last plowing and spading match at Flushing.

FLUSHING, *May* 13th, 1847.

My dear sir—Enclosed I send you the programme of the 6th Annual Exhibition of the Queens County Agricultural Society to be held in October next, of which due notice will be given of the particular time. I advised them to leave the time blank in order that they might have their exhibition conform to the period to be fixed for the exhibition of the American Institute. They are very much pleased with the idea of again uniting our exhibition at Flushing. I communicated to them the assurance you gave me, of the Institute having their next Fall plowing and spading match at Flushing. They say that instead of having a car drawn by only fifty pair of oxen, they will have one drawn by one hundred pair, to receive us at the landing, to convey our deputation in grand style to the field of our glorious operations. There is going to be a great rally throughout Queens county in honor of the occasion. I think you may rely upon a grand fete considering the ambition that seems to prevail for having the anniversary got up with surpassing pomp and splendor.

I exceedingly regret to hear our Agricultural College and Experimental Farm application, is reported against in our Legislature. Let me hear particularly upon the subject from you. My kindest regards to the Areopagus. Yours, &c.

ROBERT LAWRENCE.

Mr. Wakeman, presented a circular from Richard Varick De Witt, of Albany, giving a notice of his establishment in Albany as a *Patent Agent.*

Mr. Clark Rich, of Shoreham, asks for information relative to cheap coffins for a vault, to be durable.

Charles Henry Hall. A rich specimen of the double flowering apple from his grounds at Haerlem was exhibited. The flowers have stems as long as cherries and are clustered more.

Theodore Dwight, presented for examination the Elator Noctilucus, a perfectly harmless bug, of a dark color, of an inch and a quarter long, which has on each side of the head a *bright lamp* about one sixteenth of an inch in diameter, whose brilliancy is diminished or increased at the will of the insect. When brightest it resembles the bulls-eye light on a small scale. It lives on the sugar cane, and its present dwelling is a joint of sugar cane sufficiently hollowed out for it, this is occasionally wetted and the insect feeds upon the inside of the house he lives in.

Chairman. As no one offers, after repeated invitation, to converse upon the subject of the day, Dairy Husbandry; I will endeavor to say something upon it. The cow from time immemorial, among savage and civilized people, has been an animal of great interest, indeed many rude nations living a shepherd's life, to this day take an interest in her approaching to idolatry, she is kind and docile in her habits, and furnishes them in a great measure with the means of subsistence, and this last, precisely in proportion to her feed and the care that is taken of her; strong inducements surely, not only for care but veneration.

The cow is to be found in every quarter of the world and almost every temperature, and travellers and historians unite in saying that everywhere, she is either small or large, a little or a great milker, according to the richness and abundance of her feed, and this among rude nations consists chiefly of the natural pastures of the earth.

It is said by the highest authority, that there are some tribes of Tartars, such as the Eluth, in Asia, that have as large and perhaps as well formed cows, and certainly as great milkers as any in the world, for the reason that their pastures, in richness, will compare with any. I will engage there are no herd books here, to trace the genealogy of two or three herds of cows, in the hands of as

many exclusive owners, up to the 20th degree of progenitors in both lines, nor jealous neighbors to recommend soiling or stalling, because local causes restrict them in range and room for their cattle, and they have no idea of being outdone in quality and quantity or product by those not so restricted. Yet these rude people have large handsome cows, great milkers, and that because in their way they take good care of them, drive and tend them on the most abundant and nutritious pastures, and let them roam and choose their food at will.

Our happy country certainly has great inducements to procure the best race of neat cattle, and not only cows on account of their milking qualities, but that we may have the best animals for fattening and for work. Our nation has a great capital vested in this branch of husbandry and great interest at stake. The question before us submits only cows to our examination, and I sincerely believe after some inquiry and attention to the subject, that we have as good breeds of native cows for producing milk, either in quantity or quality as any people in the world, and principally because we have as good and as plenty of winter and summer keep for them, and can make them as thrifty and as comfortable in every way, if we please, as any other people can. I would not have believed this until I looked into Mr. Colman's reports on the Agriculture of Massachusetts, wherein he notices the Dairy Husbandry of the State minutely, and cites cases of great product, from that and other Eastern States, and also some of the middle States.

Mr. Colman, has travelled lately in Europe, on an agricultural mission, to collect information on every branch of the subject, and report on his return, which he has done, and his reports are published. He is an acute observer of all farming operations, and shows great anxiety in stating facts, to state them truly and according to the best information, and when he has doubts as to their truth or correctness, candidly to say so. The average produce of the best dairies in England, is about 400 to 448lbs of cheese, about 212 lbs. of butter, and about 2,200 qts. of milk to each cow the season; in Scotland something less. In Massachusetts the average is fully equal to the English. In all, there are locations where considerably more is produced, according to the breed, the feed, and the care. There are native individual cows in the Bay State, and a number also of other States, the names of whose owners he gives, and their places of residence, that have yielded from 12 to 21 lbs. of good butter a week, and milk in proportion. This large amount only a part of

the season. There was only one cow in England that exceeded these, and that was the famous cramp cow of Lewes, of the Sussex breed.

Mr. Colman says nothing about soiling that I saw, to the east, but that the farmers all grazed their cows in summer, and some of them told him, that they like to get their cows to pasture as soon as possible in the spring, they thought they did better in health and milk. He gives the Irish credit for their fine dairy, rich pastures and excellent butter. The English, Scotch and Irish, though, go ahead of the Americans in the quality, if they do not in the quantity of their butter, especially for keeping sweet longer. But all must yield to the Holland (Dutch) for quality of butter and cheese, and fully equal to any of them in quantity and probably a little more. The Highland Agricultural Society of Scotland, offered a large premium a few years since, for the best report on the Holland dairy system. This was given to Mr. Mitchell, who visited Holland and inspected very minutely, and with great care its dairy establishments, and published his report thereon, nothing, he says, can equal the cleanliness and method of their whole system of milk, cheese and butter operations; their cows are turned out to grass generally, early in April and kept there thirty weeks, and then brought in for the winter, one man to every ten cows, who tends them in the pasture, brings them up at night, stables and milks them. The dairy women, two for every ninety cows, receive the milk from the men at the dairy house, and all after is under their care and done by them. The stables for the cows are well ventilated, ten feet ceiling and wide, paved with the best dutch brick, every convenience for catching and preserving their droppings, liquid and solid, that not a particle may be lost, and to preserve cleanliness. The stables of the cows are kept as neat and clean as the parlors of their owners, and of course their milk houses where they keep their milk and make their butter and cheese must be; nothing in the least offensive in smell, allowed to come near them; it is sure, they say, to affect the milk and butter. Their butter, whether for packing away in barrels or to be sold immediately, is well worked, and salted with the best of soft fine salt, that it may dissolve and be equally diffused through the mass, two pounds of salt to fourteen of butter, not a particle of milk or whey left in it. After the cows have been at grass about three weeks, the milk and butter shew it, and as they work the latter, keep their implements and do it up, it is both delightful to look at and delicious to taste, and sells for a while at home in Holland, for from 50 to 60 cents the Dutch pound of 17½ oz. and if they can get it in London in season, which

they sometimes do, considerably more. The barrelled butter for keeping, will bring in any European market, and especially the English, from 10 to 20 per cent more than any other, and always in demand, as it keeps sweet almost any length of time. Among other causes given for this superiority of the Dutch butter, is its being *grass* fed and the *manner* of feeding on the pasture field. I wish our friends, advocates of the soiling system, to notice some of the facts above stated. Here is one of the most thrifty little nations of Europe, possessing large droves of cattle for the dairy and the shambles of the best quality, who finds it her interest to graze them in the summer. We are told in face of this, that nations and States adjoining her, some of them not so populous, possessing more territory yet soiling their cattle, because it is their interest. It gives them more and better manure, makes their land richer, they have more to till, and can raise more breadstuffs to feed their population. I must confess I thought so myself till lately, and that it was the interest of most of Europe to soil, but since I have got more light on the subject I doubt whether it is, and certain I am that it is not for the interest of our own country.

I have more to say, but our time has expired, and some one else may wish to speak. I should like, if agreeable, that the subject be continued to the next meeting, to give every person disposed, an opportunity of freely offering his sentiments upon the important questions involved in it. As may be perceived, I think the old fashioned native Yankee cow, of a good race, and well kept, is as profitable as any in the world, and that the old fashioned Dutch and Yankee way of keeping her in summer *on the pasture field*, is the best to make that profit tell in the pocket; yet I am open to conviction, and may change my opinion even on these points, if unanswerable arguments are presented on the opposite side.

Mr. Wakeman. The best English cows have given two hundred pounds of butter in a year. Two gallons of milk usually make one pound of butter.

Alderman Hall. Mr. Schenck of Matteawan had a cow which gave 36 quarts a day.

Henry Smith, of Astoria, purchased a cow which was shipped in the British Queen, at Portsmouth, England, in 1840, and from injuries received on the passage to New-York, was not considered in condition to return in the ship, which cow gave 36

quarts of milk daily, and occasionally gave 38 quarts. She is a cross breed, but the Durham blood from her appearance prevails. Although advanced in years, she is still a noble cow, in fine condition and milk.

Alderman Hall. The chairman is of opinion that we have a good breed of cows in our country. The breed is excellent. Remember that our ancestors left the old world in troubled times; that then the arts of agriculture were low. They came in search of civil and religious liberty. They came from the best districts in England. I have seen the spots they came from, in order that I might compare the works of the fathers with their sons! As to our New England cattle, a system has prevailed. We selected a color as well as figure—we adopted that peculiar red now almost universal. Now it is a constant, bright and permanent color, not like many others, liable to disagreeable changes, such as white, which is, as is termed, liable to be scalded in great heat. The yellow stands well summer and winter. We choose a cow having a well formed bag, delicate in her forehead, and wide in her hips and deep in her hinder quarters, with a full well rounded barrel, delicate in the head and neck, and fine in the bone. The cow has four stomachs, in which the digestion is made by processes which demand the pasture, and cannot be supplied by soiling, perfectly. She is a graminvorous and ruminating animal. No stall feeding can give the same advantages as fine pastures, exercise, running water, &c. New England oxen are red, and as much alike as so many peas. The breed is so good that I defy the world to beat it, and I have seen those of the old world abundantly on their own farms. Even England has not yet acquired the habit of managing oxen. I have seen a Yankee contract to do work with oxen, and to beat those who tried to do it with horses.

As to butter, put it into a water bath which causes the serum to leave it, it then keeps as well as Holland butter does. Put an ounce of honey to a pound of butter, and it will keep in any climate. One ounce of salt (such as is free from bittern) is sufficient.

Subjects for the next meeting, Dairy Husbandry and Seeds. The Club adjourned.

H. MEIGS, *Secretary.*

Judge Van Wyck in the Chair.

Mr. Meigs, read the following articles prepared by him.

SHEEP.

The earliest records of Spain mention the fact that their wool was particularly fine. Strabo, who wrote in the first part of the first century of the Christian era, mentions wool as a principal article of commerce from Spain. Speaking of Trudetania, now part of Portugal, he says: the most excellent wool is that of the sheep from Caraxi, a ram of which breed has been sold in Rome for a talent, equal to $1,080 of our modern money.

The Western Iberians (Portugal and Spain) have made the most excellent cloths from their sheep, not however equal to the Caraxi.

The Caraxi were a people of Asia. Thus we see the high estimation held in Rome of fine wool, when so large a sum was given to improve the breed.

When the Moors overran Spain in the eighth century, the natives retired to the mountains and kept flocks of sheep. The Monarchs became shepherds. This being a royal flock, it was called the precious jewel of the crown. A royal council was formed, styled "The Council of the Grand Royal Fock, and the laws relative to Spanish sheep, have been digested into a code, published in a large folio volume, by the title of 'The Laws of the Royal Flock.'"

ALPACAS, ETC.

Ulloa observes, that in the district of Liper, in Peru, the air is very cold, and there are nourished great herds of Vicunas, Alpacas, or Tarugas, and Lamas, animals common enough on the high mountains where the cold is continual.

Some parts of Persia, and the province of Cashmere, in the northern parts of Hindoostan, furnish wool of perhaps the finest kind in the world. The sheep are kept on the bleak mountains of Armenia the greatest part of the year, and the tops of the mountains are continually covered with snow.

Bernice says that this region is frozen half the year, that it is a miserable country, but that the trade is chiefly in wool, finer than

that of Spain, from sheep called Zoar, that the wool of these resemble Beaver far more than wool. That the natives make shawls of it a yard and a half long, which sell for more than ninety dollars each.

L'Abbe Raynal says that they manufacture turbans of it, for the Omrahs and other Grandees, of a yard in width, and somewhat more than three yards long, which sell from $500 to $750 apiece.

H. Meigs also presented the following:

Lindley's Vegetable Kingdom, London 1846, from which we make the following extracts.

The locust trees of the West have been celebrated for their gigantic stature, another species are the Cossi, of the South American forests. Martius represents a scene in Brazil, where some trees of this kind occurred of such enormous dimensions that fifteen Indians with outstretched arms could only embrace one of them. At the bottom they were 84 feet in circumference, and 60 feet where the boles became cylindrical. By counting the concentric rings of such parts as were accessible, he arrived at the conclusion that they were of the age of Homer, and 332 years old in the days of Pythagoras; one estimate reduced their antiquity to 2051, while another carried it up to 4104.

Dr. Pierson, of Orange, N. J., presented seeds of the fine Arkansa water melon, a globular large rich melon, close texture, flesh straw colored.

Franklin Knight, of Philadelphia, presented to the Institute a copy of his last edition of the Farmer's Souvenir, and Washington's Agricultural Correspondence, a book which no farmer should be without, for the perusal of it will elevate all its readers.

Mr. Knight, authorizes the Secretary of the Club to present, in his name, a copy to the Royal and Central Society of Agriculture of France.

Charles Henry Hall. The following note from him on the Isabella grape vine was read.

To Mr. Meigs. A late traveller in France, obtained cuttings of grapes for England, of Messrs. Audibort Freres, of Tonelle, near

Turascon, in the department of Bouches du Rhone, and among them, one Isabella, an American grape, black, with the flavor of the raspberry.

Nothing is said more respecting this Isabella grape, either of its quality for eating, or for the making of wine or brandy. It would be interesting to know, the result of the transplantation from America (the native country of the Isabella) to France; the opinion there of it as regards all of its qualities; and whether a change of country has made a change in any of them. The color, the pulp, bearing flavor, &c., &c., are to be ascertained.

Cuttings of this vine, in France, to be obtained and sent back again, would probably solve a question, what climate may effect by transportation from the Eastern to the Western hemisphere, and so alternately.

The Isabella here in the State of New York, makes good wine, but requires the addition of saccharine to the must, in conformity to the rule laid down by Chaptal. In Ohio, over the Alleghany mountains, Mr. Longworth has abandoned the Isabella vine as not proving so good for wine, or for the table, as other American vines; for example, the Catawba, being one.

CHARLES HENRY HALL,
Member of the American Institute.

New York, May 28, 1847.

Ambrose Stevens. Col. Carmichael gave me some bottles of wine made by him from Isabella grapes, a red wine, some of it without sugar being added, and some with it. That without sugar was put into a cask, and in November when it had slightly fermented he left the bung of the cask open for a few days. He then bottled it, and after being in bottle a year it had a fine quality resembling Burgundy wine; other wine from the very same must, to which he added sugar, was bad.

Professor Mapes. The so called wines made from various fruits, elder, currant, &c., are not wines, they are properly cordials, formed by adding sugar and alcohol.

Oliver Smith. Fermentation is the greatest enigma in chemistry; my theory of electricity alone explains it. The active fermentation is misunderstood. When a bottle of wine is corked tight, no acetic acid can be formed, for hydrogen, which results from the decomposition of the water in the wine, cannot then escape.

Col. J. S. Skinner. A communication from him was read, recommending the use of pans, made of glass, for dairy purposes, and suggesting that the Institute offer a premium of sufficient amount to induce manufacturers to offer samples for competition. He also suggested that the Institute should offer a sum either in money or plate, that would handsomely reward the trouble and expense of taking the weights and measurements necessary to ascertain the exact quantity of all the parts or materials that make up the corn fodder of an acre of corn, making the measure of the grain the standard of comparison. He also presented the following record of the greatest amount of corn per acre grown from 1820 to 1842.

Record of the greatest amount of corn per acre, grown from 1820 to 1842.

No. of acres.	Product per acre.	Whole product.	Names and places of cultivators.	Years.
1	136	136	R. H. Rose, Silver Lake, Pennsylvania,	1820
1	118	118	John Stevens, Hoboken, N. J.,	1820
1	172½	172½	J. & M. Pratt, Madison, N. Y.,	1822
4	170	680	do do	1824
1	132	132	Samuel Chidsey, Cayuga, N. Y.,	1819
8	112	896	Earl Stimson, Saratoga, N. Y.,	1823
5	129	645	Wm. M'Clure, Allegany county, Pa.,	1823
5	136	680	Joseph Evans, Washington county, Pa.,	1823
1	174	174	B. Bartlett, Eaton, Madison county, N. Y.,	1823
1	116	116	T. & H. Little, Newburyport, Mass.,	1822
1	115	115	do do	1823
1	142	142	Mr. Wilmarth, Taunton, Mass.,	1825
5	108	540	Charles Bugbee, Palmer, Mass.,	1831
1	140	140	Benj. Butler, Chenango, N. Y.,	1831
1–136		202	Henry Sprague, Worcester, Mass.,	1831
1	103	103	"Old Farmer," Rhode Island,	1833
40	140	5600	Asahel Renick, Pickaway county, Ohio,	1835
1–12	100	130	S. Lathrop, W. Springfield, Mass.,	1835
22		2216	P. Reybold, Newcastle, Delaware,	1835
1	108	108	R. H. Sheldon, Cayuga county, N. Y.,	1838

1	110	110	E. Humphreys, Caledonia, N. Y.,	1837
40		3800	——— Clark county, Ky.,	1837
1	150	150	——— Montreal, Canada,	1838
1	131	131	R. Lamprey, Moultonborough, N. H.,	1839
1	116	116	Mr. Brown, Strafford, N. H.,	1839
1	130	130	P. P. Pillsbury, Tuftonborough, N. H.,	1839
1	144	144	J. F. Osborn, Cayuga county, N. Y.,	1841
1	121	121	J. Sherman, do	1841
1	112	112	do do	1841
1	120	120	Mr. Ellsworth, Conn.,	1840
1	158	158	G. W. Williams, Bourbon county, Ky.,	1840
1	120	120	W. Ingalls, Oswego county, N. Y.,	1839
7		1352	J. Myers, Canton, Ohio,	1840
1	154	154	W. Ingalls, Oswego county, N. Y.,	1840
2	116	232	B. Bradley, Bloomfield, N. Y.,	1841
1	122	122	Samuel Phelps, Cayuga, N. Y.,	1842
1	113	113	Wm. Ingall, Oswego, N. Y.,	1842
1	132	132	W. Wilcox, Saratoga, N. Y.,	1842

The number of such crops, where the product exceeded 100 bushels per acre, might be extended to a great length from the list in our possession, but the above is sufficient.

Prof. Mapes. The sugar refiners use sometimes milk, instead of blood in their process—there being a prejudice against the use of blood. For that purpose the cream must be entirely separated from the milk. The following method is adopted for that purpose. Pans containing some five gallons of milk are used, having rims by which they are readily handled; on the bottoms of these pans, strips of zinc are laid with their ends bending over the sides and touching the shelves on which the pans rest—and this in a cool damp situation. The effect of this practice is, that the cream rises much more rapidly to the surface of the milk, is much more perfectly separated from it, and then the milk is drawn off below through holes in the bottoms of the pans.

Col. Edward Clark remarked that pans of zinc coated with tin had been employed for this purpose, and it was found that galvanic action produced a rapid rising of the cream.

Ambrose Stevens. A gentleman at Vernon, originally from Devonshire, had used zinc pans in his dairy, to facilitate the rising of cream. He showed me the difference between the effect in tin, and in zinc pans. The same milk gave its cream several hours later in the tin than in the zinc pans.

Mr. Wakeman remarked in reference to the petition for our Agricultural School, &c., that it had been said, all the petitioners were in this city only, but he knew perfectly well, that out of any 500 citizens to whom he might apply for their signature to the memorials, not one would refuse! But had we time to ask every man! The importance of such a school, such a system of education, and that too, to be commenced near this great city, where every possible advantage existed to insure its success, was too apparent for argument. But we mean to buy the land, and then the Legislature seeing that we are seriously in earnest, will without a doubt, aid us in the foundation of this new and admirable system of Agricultural Education.

Judge Van Wyck. We Americans are fully equal to our European friends in our stock of cows, which give as much milk and of as fine quality as any they have. But we do not equal them in the quality of the cheese and butter for exportation. We make as good for our domestic consumption however, generally speaking; we like to eat the best butter, and we do it. Those who make the best have as much custom as they want, they are sought after. But we export

inferior articles, much inferior to the foreign, and vastly so to the Dutch. The sales abroad prove all this plainly enough. In 1840 and 1841, the sales in England were for American butter, highest price 95 shillings per 100 cwt., and down to 45, 44, and to 40 shillings; while at the same time, Dutch butter sold for 110 to 120 shillings! The greater part of our exported butter, being mere grease and poor grease too! We must take more pains, as much for export as for our own eating. How is this improvement to be made? By taking the same pains that they do in Ireland, England and Scotland. They use the utmost care in every stage of the process, being in everything extremely clean and neat; no tainting smell of any sort is tolerated near their dairies. They work the butter in pure cold water, so thoroughly that not a particle is left except pure butter, until the water it is washed in, runs off as pure as spring water. They do all this with clean wooden ladels, and not with their hands!

We have taken more pains with our cheese, and it has gained reputation abroad, and we ought to sustain and increase that reputation. Much depends on the feed of cows, and we must attend to this. Let them have rich pastures, and feed at their ease, and choose their feed. Pumpkins and cabbages are fine food for them until the holydays, then feed them carrots; there is nothing equal to carrots for making fine milk and butter, it is nearly equal to fresh summer pasture in quality and in quantity, and in this we have the advantage of all Europe in the quantities we readily produce.

J. Moulton, of Rochester, presented some very fine apples called the Northern Spy apple.

June 15th, 1847.

Charles Henry Hall in the Chair.

INTERESTING AGRICULTURAL FACTS.

BY H. MEIGS, ESQ.

The care of enlighted and patriotic men has caused the introduction of precious plants and animals into countries which had never, since creation, before possessed them.

Lucullus first introduced cherries into Italy, from Pontus, and he first planted them in his princely garden in Rome, where they have ever since flourished, as greatly as they had done in Pontus.

The Malus Pyrus, or rather Epyrus, (the Pear,) from Epirus. The Peach (Malus Punica) from Carthage. The Apricot (Malus Armeniaca) from Armenia. The Quince (Malus Cydonia) from Syria; these, after having been naturalized to the climate of Italy, were afterwards transplanted by the Romans, into all the countries conquered by them. The tree from which the first sweet oranges were raised in Portugal, is, perhaps still living in China, and bears the name of China oranges, for they were not natives of Portugal.

Rice was first introduced into Carolina about the year 1740.

In England, about the year 1500, there were no musk melons, sallads, cabbages, turnips, carrots, nor any of those garden roots so important now to the people. Long after that, the cauliflower was introduced, which now grows so finely in England. About the years from 1525 to 1550, hops and pippin apples were first introduced; gooseberries, also currants, roses, July flowers, carnations, asparagus, oranges, beans, lettuce, plums, musk roses, tulips, and artichoke. About the year 1769, the rhubarb plant was deemed so naturally confined to Tartary, that the Emperor of Russia, regulated the quantity brought to market, and the price of it, much in the same way that the Dutch have done cloves and mace, and they made England pay annually nearly a million dollars for it, and it now grows in England to great perfection, and as easily as the common dock.

As to birds, the peacock was introduced into England from the East Indies, the pheasant from Asia Minor, and it flourishes in England.

Our barn yard fowls were brought originally to England from Asia. Our horses from Barbary, Turkey, Persia, Andalusia of Spain, and from Arabia, and they flourish among us. Our fallowden are from Hindoostan and the Tropics. James I, introduced the cattle.

Before the reign of Tiberius Cæsar, it was supposed that the silk worm could exist only in China and Persia. But about the times of Augustus and Tiberius, some enterprising man carried the eggs to Greece, where they were found to hatch and thrive perfectly well. They afterwards were carried to Asia Minor, but it was several ages before they were naturalized to Italy by the Francs.

Chairman. I am pleased to see Mr. Fleischman in attendance; we have invited him and now desire to hear his observations in re-

ference to the high bred flocks of sheep of Continental Europe, which he has examined, and samples of whose precious fleeces he has presented to the American Institute.

C. L. Fleischman. In 1845, I was commissioned, Mr. President, by the Patent Office of the United States, to visit Europe, and to obtain knowledge of the actual condition of the wool raising there. We had many erroneous ideas on that subject here. It was justly deemed of great importance to us to know all about an article, without which we must not pretend to vie with the old world in the manufacture of fine woollen goods, which the increasing population and wealth of our country imperiously demands. In my tour on the continent of Europe, I discovered that the celebrated wool of Saxony had decreased in value, their breeders of sheep had made serious mistakes in this very delicate culture. That in Prussian Silesia, more intelligence and care had been bestowed upon it, and in consequence, a very superior quality of wool was obtained. Silesia has now the Golden Fleece of Spain! After about forty years practicing, they have obtained a breed of sheep whose fleece is equally fine on the neck, back and sides of the sheep; such fleeces are always preferred by manufacturers.

The sheep in Silesia are never allowed to be exposed to much rain —shelters are always provided for them, nor are they permitted to be exposed to dust, for both these are causes of serious injury to the fleece. The greatest possible care is taken in the breeding—men of the greatest experience are employed to go from farm to farm, to examine the sheep, and to select the best rams and ewes from every flock. The lambs are also all carefully examined as to their fleece bearing properties, and all but the very best sold off. The whole economy of the sheep farm is as perfect as intelligence and perfect industry can make it. The best food for the sheep at all times, is provided. Each month has its peculiar food. In January, in the morning, one pound of *sain foin*, (sound hay) is allowed to each sheep; water is given to them at 9 o'clock. At 10 o'clock, half a pound of the hay of second quality, the same portion at two o'clock P. M. Water at three o'clock P. M. and a pound of mixed hay in the evening. Strict attention is paid to the temperature in the stables, which is maintained at about sixty degrees Fahrenheit. If the warmth should be much above this, the lambs are apt to die.

In February, rams and ewes are coupled, the rams being restrained by a bandage, these couples are in separate stalls; they are fed each

in the morning with a pound of oats and vetches mixed. At ten, o'clock A. M. half a pound of hay; at one o'clock P. M. half a pound of sain foin; at 3 o'clock P. M. water; at 4 o'clock P. M. half a dozen sheaves of oats, partly threshed; in the evening with twenty pounds of straw for every hundred sheep. In March the same feeding is observed only they have water at 4 o'clock P. M. instead of 3 o'clock P. M.

In April, one pound of sain foin in the morning; water at 8 o'clock A. M. with straw; at 11 o'clock A. M. half a pound of sain foin; at 2 o'clock P. M. half a pound of the same; water at 4 P. M.; at 6 o'clock P. M. fine sheaves of half threshed oats and twenty pounds of straw for every hundred sheep. The lambs have half a pound of the best hay in the morning, water at 8 A. M.; at 9 A. M. to each hundred lambs, six half measures of oats; at 11 A. M. a half pound of lucerne each; at 2 P. M. one pound of lucerne each. At half past 4 P. M. six measures of oats to each hundred head; at half past 5 P. M. a pound of vetches and oats mixed to each.

In May they begin to pasture, in the middle of the day, when it is hot, the sheep are led to their stables for shelter. In rainy weather they are fed with lucerne mixed with chopped chaff.

In November stall feeding begins again. I saw the finest sheep of Europe on the estates of the Arch Duke of Austria. The men employed there, were educated in agricultural schools, and thorough science and practice were united in them. The price of fine wool from these flocks was about $75 per 100 pounds of wool. Accurate registers are kept of every sheep, so that the best are always readily known at once. The coupling of rams with ewes, is not permitted until the rams are about 2½ years old.

Some of the lands in Hungary are much like our western prairies, these are found not to be so favorable to the health of the flocks. The fine wool of Germany is (much of it) exported to England, while Hungarian wool of inferior quality is brought into Germany. I think that wool produced by the Merino Ram and Leicester Ewes, would be a good breed for the United States. The quality of wool depends not only on the finish of the fibre but on its evenness, it has a peculiar curl which manufacturers require to be uniform or they do not like it.

Mr. Fleischman said that boys of 12 to 14 were sent to the modern agricultural schools, where they are taught practical knowledge

of the whole business of farming, and also so much mechanism as to be able to make or mend every machine and implement used in farming. The teaching tends to make thorough economists of them, so that their farms shall always continue to improve. They are not taught abstract science, chemical or otherwise, but the positive knowledge, the soils, manures, rotation of crops, the kind of work, number of men, horses and cattle required on a given amount of acres. He wished that our people knew the importance of the Agricultural Schools of Europe, and hoped that our government would see the propriety and necessity of liberal patronage, for such a course of education among ourselves, for it would give energy to agricultural labors and result in the most incalculable benefits to our country. I have been four years at the Royal Bavarian School of Agriculture.

I ought to remark, that on the plains of Hungary, they often experience much loss from diseases in their sheep.

Chairman. What are those diseases?

Mr. Fleischman. The rot, the foot rot and the lung worm; I lost nearly 400 fine ewes once, from the neglect of the shepherd, who had carelessly allowed the sheep to get to a pond where they drank, and immediately became diseased.

All the perfection of farming in Europe, is due to their agricultural schools, and in this republic where we ought to be first we are second. The monarchs of Europe have discovered the necessity and they are now ahead of us. The remarks I here make, are only extracts from documents which are intended for publication. I attended an examination of agricultural scholars at Breslau, and was surprised at the sound practical knowledge exhibited by the young men; I have loved this subject for twenty years. Let me remark, here, how beautiful, how scientific, how noble are the works now in existence in Lombardy, for irrigating their lands, how excellent their cultivation. I had admired the splendid statues from the chisel of Canova, but I own that I turned my eyes from them to the more enchanting scenes of highly cultivated fields.

Chairman. We have listened to the speaker with deep interest and unmingled pleasure. He has given us a discourse full of practical knowledge, and of such importance as no man can deny; and we find it now peculiarly interesting, for the American Institute is at this time engaged in strenuous endeavors to establish an Agricultural School of the highest order; we have already found a location, where

hill and vale, water, soils, proximity to our city, facility in every respect, invite immediate action. We should be happy to have the opinion of Mr. Fleischman of its fitness, and we invite him to join us in a visit to it.

Mr. Fleischman. I will do so with the greatest pleasure.

Chairman. In the name of the Club, I return our sincere thanks to Mr. Fleischman, for his most valuable discourse this day, and for his offer to unite with us in an examination of our proposed location for the school and farm.

When I was in Spain, I read a letter from Thomas Jefferson, in which he spoke of the immense importance to the United States of the introduction of wool culture into our country, of the exportation of her Merinos to Germany, &c. I travelled in Spain with an Ambassador for the purpose of acquiring some knowledge of the culture of wool; I observed great variety of figure and size of the animal and qualities of the wool. In 1809, I sent some of the best Merino sheep home to my father in New-England. Col. Humphreys had before that time sent some home. My father pursued very much the same course of care and feed mentioned by Mr. Fleischman. I also visited the great establishment at Rambouillet in France, from whence the late Chancellor Livingston obtained Merinos and sent them home. I purchased from flocks of the Duke Del Infantad in Spain, 400 Merinos, which I sent to Messrs Brown and Rives of Richmond, Va. Little attention was bestowed on them, and they were soon after scattered to the four winds. The yolk in wool, is peculiar to Merino sheep, or but little of it is found in other breeds. We have gone backwards in our breeds, we have twenty millions of sheep in the United States, but very few of pure blood. We must have the choice sheep from Germany. I prefer that to Alpacas, we do know that sheep will flourish here, but we do not know how it might be with the Alpacas.

We must have Agricultural Schools here! You gentlemen of the American Institute, have by great economy saved a little money, you can apply that as far as it will go; but allow me to say that it is ridiculous to behold a powerful metropolis like this lacking in patronage to so noble a plan as an Agricultural School. But we have undertaken its establishment, and we will go on, and if we cannot otherwise succeed, we will, by leading on the farmers of the land, the bone and sinew of the country.

Alderman Hall then invited Judge Van Wyck to take the chair.

Governeur Morris. Mr. Governeur Morris states to the Institute, that an insect has made its appearance in his orchards the present year, not hitherto seen by him. It is an oval insect, about half the size of a seed of flax, having six or eight legs, of a dark flesh color. It attacks and destroys the leaf, upon which perhaps will be congregated from one to two hundred of them. The leaf curls up, turns black, and is covered with a gluten, which adheres to the fingers, and is difficult to remove. From appearances, the entire leaves will be destroyed. The glue is in great abundance, without color. The question is, Is this a new insect or not? If not, the remedy to destroy it.

Mr. Bensen, of Westchester. To defend some of my plants from insects, I planted onions first. When they were up I planted cabbage seeds near them; I had no difficulty with insects. I tried the same plan, with the same success, with radishes. Perhaps alternate rows of onions and turnips would answer well. It will do for cucumbers, melons, &c., planted in hills with some onions growing around the hills. This plan will do for a farm. The cost of planting some onion seed may well be borne, if we can save a whole field of turnips by it.

Roswell L. Colt, of Patterson, New-Jersey. A letter from him to Mr. Wakeman, Corresponding Secretary of the Institute, was read. Mr. Colt presents to the Institute one hundred dollars, to be expended in procuring a perfect analysis of Indian Corn—its grain, stalks, leaves, cobs—in order to determine their true relative values in nutrition, and the salts contained in the ashes. Mr. Colt observes that he tried some Jersey white corn, shelled a heaped bushel of the ears, and found half a bushel and six quarts of shelled corn; he weighed the cobs and found it seven pounds. He remarks that if we raise in the United States five hundred millions of bushels of corn, the cobs must weigh three and an half millions of tons. Now, if there is nutriment in these cobs, we throw that away—if there is potash in it, as all our women say, what amount?

Mr. Colt observes, that he has more potato blossoms now on half an acre, than he had last year on 45 acres, and the plants look more flourishing.

Mr. Wakeman called for the reading of an extract from a letter from the Hon. H. A. S. Dearborn, Mayor of Roxbury to him.

"The American Institute has done much to promote all branches of industry, but among them all there is not one so important as agriculture. Truly was it said by Socrates, that 'Agriculture was the most worthy of the application of man, the most ancient and the most suitable to his nature; the common nurse of all persons; the source of all health, strength and plenty; and the school of all the virtues.'"

The story of Joseph is now being fearfully illustrated, after a lapse of 3,553 years by us. The wronged and expatriated son, the youngest of the "Brotherhood," of nations has converted these United States into a modern Egypt of 'Plenty,' while famine is sore in all other lands. * * * Intelligence and industry, science and art must be united in developing the infinite natural resources of this Republic."

Messrs. Wakeman and Meigs spoke very highly of Tomato sauce made by Mr. Wendell last year, and put into bottles. That its flavor appeared to be as good as that made from the fresh Tomato.

Mr. Wakeman. A few individuals moved by selfish, private motives, it is believed, are getting up remonstrances against our proposed Agricultural College! Members who approve our plan, will take care to collect petitions. One member has had no difficulty in obtaining signatures at the rate of [illegible] dreds per day. Almost every man applied to most cheerfully subscribes.

Chairman. I agree with Mr. Colt relative to the importance of the analysis he proposes. Corn fodder, when duly prepared, contains almost as much saccharine as grapes. The crop is easy to raise in plenty, and cheaply. I move that the thanks of this Club be presented to Mr. Colt for his liberal donation of one hundred dollars for an analysis, and that it be recommended to the Institute to accept it and carry out the object.

This motion was seconded by Messrs. Hall and Wakeman, and was unanimously adopted.

Theodore Dwight presented to the Club his volume of the American Penny Magazine, edited by him, which contains a great variety of useful as well as interesting matter.

Chairman. The turnip crop can never be in our country so important as it is in England. There they can let the turnips remain in th

ground. They thus retain their juices and sweetness, and as the stock bite off the roots, their manure is well spread. The ground is benefited by what remains of the turnip when that rots. To obtain good crops of turnips it is necessary to manure highly with barn-yard manure or bone dust. A rapid growth of the plants is one of the very best preservatives from the attack of insects. But our Indian corn is a noble substitute for all this kind of crops.

Subjects for next meeting. Turnip Culture and Wool continued. The Club adjourned.

H. MEIGS, *Secretary.*

June 29, 1847.

Col. Edward Clark in the Chair.

Mr. Meigs addressed some remarks to the Club relative to the preparations for the twentieth Annual Fair of the Institute. The managers have obtained Castle Garden for the exhibition, and nearly arranged as to the place for the ploughing and spading matches, and for the cattle show. That the prospect was extremly agreeable as to the still more extended interest and importance of the Twentieth Fair. All citizens who set a value upon the works of American genius and industry, are requested to take early notice, that in October next every thing which they wish to exhibit to their fellow citizens, may be ready promptly. All articles for competition at the Fair, must be at the Castle on the first or second of October next, at farthest. This is necessary in order to give the Managers an opportunity so to arrange all articles, as to do the exhibitors full justice.

Mr. Meigs read the following translation by him on the *longevity of Onions.*

In the Belgian Horticulturist it is stated that M. Houlton has communicated to the Medico Botanic Society of Louviers, that an Onion which he had found in the hands of an Egyptian female mummy, which had been entombed more than two thousand years, on being planted in a garden, vegetated with great strength. It did not vary at all in appearance or qualities from our modern onion.

Mr. Wakeman read extracts from a letter from the Hon. Nathan Burchard, in which he speaks warmly of his favorite subject, Agricultural Education, and states that he will comply with our invita-

tion to deliver a lecture on that subject in this city, on the first Monday of September next.

Mr. Wakeman called for the reading of a letter from a highly estimable gentlemen of the West, which was read.

Extract of a letter from a gentlemen residing in one of the western counties of this State.

Fultonville, 26th June, 1847.

Mr. WAKEMAN:

Dear Sir—The petition to the Legislature for aid to the American Institute for the splendid object of establishing an Agricultural School and Experimental Farm, [with a garden I presume,] near the city of New-York, was duly received on the 14th instant, and fortunately the court of common pleas were in session, and the medical society of the county were in convention. The judges, clerk, sheriff, surrogate and gentlemen of the bar, and the gentlemen of the medical society, then also convened, all signed, promptly and cheerfully. The president of the Agricultural Society, also, who assures me that officers and committees will follow suit. Several gentlemen of the pulpit also promise their names and influence; that the pulpit, without distinction of sect, will join. It will be presented to the *most efficient* teachers of academies and common schools; manufacturers, mechanics, merchants and farmers. This order of signature is adopted to do away prejudice and suspicion, and I do not perceive how the committee of the Legislature are to avoid attention, respect and favor. The petition will not be laden with subscribers, but the petitioners contain the spirit and vigor of the professionals and industrials.

Mr. Wakeman, the theme, whether viewed politically, socially, or philanthropically; historically, scientifically, morally, or religiously, is exciting, overwhelming. I have already written five letters to you upon the subject, each an attempt to condense, abridge, and supercede the other; but facts, ideas, and imaginations multiplied as I wrote, and are all laid aside or destroyed, as inadmissible claimants to your patience. Simply inviting your leisure to an analysis of history and statistics of other times, and nations, and of our own State and Union for the last seventy years. Compare the condition of nations under the embarrassing influence of the feudal system, and those where agriculture, science, education, and rights of person and mind, are unencumbered and equal; or, the condition of plenty, peace and hap-

pines in the Eastern and Western Hemispheres, at the present moment.

Yours, ——— ———

John Lodge, of Westchester, exhibited a bunch of young wine apples, half destroyed by the Rose or Cherry bugs; nearly the whole crop of this year will be ruined. He recommends throwing unslaked lime, or boiled tobacco juice over the trees, in order to destroy the bugs. He will try it and let us know the result.

Chairman. I have an onion in my garden which has now continued its growth for three years, living through the winter.

Judge Van Wyck. I do not doubt the longevity of the onion. The cereal grass seeds have been known to retain their vitality for eight hundred years.

Chairman. Seeds have been found seventy three feet deep in the earth, which being of an oily nature, seem to have thereby retained their vitality. Seeds are found preserved on mummies by the asphaltum and other embalming materials used in the preservation of the mummies. Some of the finest grains have been produced from such mummy seeds.

R. L. Colt, of Patterson, N. J., states in a letter to T. B. Wakeman, that the late rains have clothed the whole country around him with beautiful green. That wheat, rye and oats, look well; potatoes never looked better; have a fine display of blossoms; that last year there were few blossoms; that he saved but a few seed balls; that in 1845 he could not procure any in Jersey for love or money. Mr. Colt is sadly disappointed in the promise of fruit. There were but few blossoms of apples or pears, and the cold winds of May caused the young growth to look as if fire had passed over it. Cherries are deficient. As for peaches, a new enemy has appeared on his farm; a bug like the lady bug has punctured almost every peach. He says, "I am going, not to the far West, but to the near West, Chicago. I deem it all important that we show to our Western brethren, that we are in favor of internal improvements, and I am satisfied that the outlay for the next five years shall be a Western outlay! and, rely upon it, that they from the West will repay us with compound interest.

"I have heard much said of the benefit of salt applied to plum trees. I have tried it, dressing the surface four feet in diameter

around my trees. I used salt from packing houses, for I am an economist, but this salt contained also a considerable quantity of saltpetre. This dressing killed three out of four of my young plum trees, but the old trees, which have heretofore always dropped their fruit, now promise to mature a portion of their plums. So, hereafter we shall use salt, but not saltpetre

Chairman. We shall be happy to hear Senator Lewis, of Alabama, on agricultural subjects as particularly relate to our Southern country.

Hon. Dixon H. Lewis. I am not prepared to make a speech, but will make a few remarks. I like deep ploughing, especially for corn. I have raised corn for twenty years on a deep black soil on my plantation. I used to get from 50 to 70 bushels an acre, but at last it ran down to 30 to 45 bushels. My ploughing had been always shallow, not more than five inches. I sent to the Northern States for Prouty's ploughs; with them I ploughed from 9 to 12 inches deep, and subsoiled also, so that I tilled to the depth of 16 inches. Prouty's ploughs threw up 7 inches of the soil never stirred before; it was new soil. I used three horses to one of those ploughs. I got the best crop of corn off this land to be found in a great distance around me. Corn brings us twenty-five cents, thirty-one or fifty. I am satisfied with forty cents a bushel. I prefer raising corn at twenty five cents a bushel to growing cotton at six cents a pound. Deep ploughing answers well for cotton, in one respect; if the soil be liable to wet, it drains it, and renders a benefit to the cotton plant. This plant has a tap root which runs down two feet and more. This root in some soils is apt to rot. A clay subsoil seems best for this tap root. There are peculiar qualities of land adapted to the growth of cotton, which are well known to our experienced planters. Agricultural chemistry is important to us; I am much pleased with Peizholdt on this point. It would be a very valuable service rendered to Southern agriculturists, to have a perfect chemical analysis made of the cotton plant in all its parts; by that we might learn what is necessary to return to the soil. We want the principles. Our cotton seed constitutes a very important manure. It contains much oil. Perhaps that may be found unnecessary in the soil, since the elements constituting the oil are derived wholly from the atmosphere. I am going to see Bogardus on the subject of a mill proper, for the pressing out this oil. If we can take out the oil from the seed, and if the balance of the seed answers for manure, we shall gain a great deal. I do not pretend to be a chemist, I am a sort of popular chemist. We know that the chemists have discovered that a huge

heap of manure, when reduced to the elements which constitute manure, becomes quite a small one.

Mr. Meigs. Chemists agree that a ton of barn yard manure, all but about ninety pounds is nothing but water, and that therefore we take much useless pains when we cart on to our land nineteen hundred pounds of water for the sake of one hundred pounds of manure.

Chairman. The oil derived from vegetation is no very material loss to the soil; it is constituted of carbon and hydrogen, which are easily restored to it. These volatile elements are capable of being preserved.

Mr. Lewis. Leibig's reasoning pleases and satisfies me. The atmosphere supplies volatile ingredients.

Edwin Williams, inquired of Mr. Lewis relative to his opinion of the relation of value in the cotton, and corn crop. After some conversation between them, Mr. Lewis said, that on the whole, he should prefer to raise Indian corn at twenty-five cents a bushel, than cotton at six cents a pound.

Judge Van Wyck, remarked upon the value of cotton seed as a manure, asking Mr. Lewis what crops it appeared to be most suitable for.

Mr. Lewis. It is excellent manure for any crop. It is much like oil cake for that.

Judge Van Wyck. How many pounds weight of cotton do you get from an acre?

Mr. Lewis. Eleven or twelve hundred seed cotton, which when ginned gives us about three hundred and fifty pounds of clean cotton. I have spoken of a proper analysis of our cotton plant as very important to our planters. All this, and other knowledge of great importance to our agriculturists would be universally diffused, if we had agricultural colleges such as we ought to have, to familiarize science with the works of the farm and plantation.

Chairman, being obliged to leave the Club, invited Mr. Lewis to take the Chair.

I. D. Williamson. I offer my services to complete the desired analysis of the cotton plant.

Mr. Lewis. I will send on the entire plant in all its parts, and your analysis of it will be gratefully acknowledged.

Mr. Lewis. The regular subject to day is wool. I call on Mr. Flieschman to give us some remarks on it.

Charles L. Fleischman. It required the experience of forty years in Continental Europe, to obtain by slow gradual means a proper staple. Manufacturers require certain qualities which have been at last attained. There are nearly twenty different wool staples. These are decided by the formation and curve of each wool hair. The perfect staple is of even size, of cylindrical form from one end to the other, and of regular curves, of which latter there are about eighty in each wool hair. The length of that wool hair is about one inch and an half. These hairs are measured by a peculiar instrument in Germany, to determine their curves and length. The number of wool hairs on a square inch of the skin of a common country sheep is about five thousand five hundred. On that of the tenth generation from the Merino cross, there are about eighteen thousand wool hairs on the square inch. At the twentieth generation fine wool is attained. This gives about twenty-seven thousand wool hairs to the square inch. When the thirtieth generation is reached, from forty to forty-eight thousand wool hairs.

The common saying is that hunger makes fine wool. Poor pasture causes wool to grow finer; then on rich pastures we see it grow coarse again. The fine wooled sheep as you see them in these drawings of mine, are deemed necessary to the production of large fleeces and good ones. A proper knowledge of wool growing does not exist in the United States. A convention ought to be held on this subject, to bring together all knowledge. All the minutiæ, even to the shears for taking off the fleece, for they are peculiar. The whole business requires extensive information of a minute character, as well as talents, vigilance, and perfect integrity in the men who have the charge of the flocks, &c.

Gen. Chandler, expressed the great obligations which he considered we are under to Mr. Flieschman for his very valuable remarks, and anticipated great pleasure in reading the work which Mr. Flieschman is about to publish, which would be found of vast value to the country.

Mr. Flieschman, exhibited fine drawings made by himself, colored o fhe life, of some of the fine sheep on the farm of the celebrated on Thaer.

Subject for next meeting, wool continued, and planting of turnips. Adjourned to Tuesday next, at noon.

H. MEIGS, *Secretary.*

August 3d, 1847.

Phillip Schuyler, Chairman of the Board of Agriculture in the Chair.

Mr. Meigs read from the Edinburgh New Philosophical Journal, an excellent paper by John Wilkinson Dawson, Esq. of Pictou, on the Destruction and Partial Reproduction of Forests in British North America.

After describing the general arrangements of the forests, viewed from the summit of a hill, presenting a continuous undulating surface of a more or less dark color, and uneven outlines of the evergreen coniferae, or of the lighter tints and round contours of the deciduous trees; and their classes usually arranged in belts or irregular patches, containing trees corresponding to the fertility, or dryness of the soil. In general, the deciduous or hard wood trees, prevail on intervale ground, fertile uplands, and flanks and summits of stately and trappean hills; while swamps, the less fertile and lightest upland soils, and granite hills, are chiefly occupied by coniferous trees. These woods perish by the axe and by fire. Forest fires have not been confined to the period of European occupation. Indian traditions tell of extensive ancient conflagrations. In dry weather, the mossy vegetable soil much resembles peat, burns easily and rapidly, and on this depends the propagation of our fires in a great measure—the only exception being when the burning of groves of the resinous coniferous trees is assisted by winds, causing the flames to stream through their tops more rapidly than it can pass along the ground. In such cases some of the grandest scenes ever shown by forest trees, occur. Swamp tracts are more secure from fire. In old forests, when the trees have attained great age—are beginning to decay—much moss grown, much dead wood and dry wood, they are more readily destroyed by fire. And we should regard these fires, arising from natural or accidental causes, as the ordinary and natural agents for the removal of worn out forests. The great fire of 1825, near the river Miramichi, in New Brunswick, devastated a region of 100 miles long by 50 broad; many persons and cattle, and innumerable wild animals perished in that conflagration. Such fires have scorched trees which soon furnished food for other fires, and ultimately there is what is termed a barren. Such is the fate of large districts in Nova Scotia and the neighboring provinces. Mr. Smith, Secretary of the Board of Agriculture of Nova Scotia, says: If an acre or two be cut down in the midst of a forest, and then neglected, it will soon be occupied by a growth similar to that cut down; but when all the tim-

ber, or tracts of great size, are killed by fires, (except certain parts of swamps,) a very different growth springs up; at first a great number of herbs and shrubs which did not grow on the land when covered with forest. The turfy coat of the land, filled with the decaying fibres of the roots and plants of the forest, now all killed by the fire, becomes a kind of hot bed, and seeds which have lain dormant for centuries, spring up and flourish in the mellow soil. On the most barren portions the Blue berry appears almost everywhere: great fields of red Raspberries, and Fire weed or French Willow, spring up along the edges of the Beach or Hemlock land, and abundance of red berried Elder, and wild Red Cherry, appear soon after. But in a few years, the Raspberries and most of the herbage disappear, and are followed by a growth of Firs, white and yellow Birch and Poplar. When a succession of fires have occured, small shrubs occupy the barren, the Kalmia, or sheep poison being most abundant, in the course of ten or twelve years forms so much turf that a thicket of small Alder begins to grow, under the shelter of which, Fir, Spruce, Harmetac, (Larch,) and White Birch spring up. When the ground is thoroughly shaded by a thicket 25 feet high, *the species which originally occupied the ground begins to prevail!* and to suffocate the wood which sheltered it. And within sixty years, this land will generally be covered with the young growth of the *same kind produced of old!* Mr. Dawson attributes to birds, the rapid distribution of the seeds of edible plants of all sorts.

After various growths, the ancient forest is renewed; trees of the longest growth prevail over all others. Animals are adapted to all their changes, some species disappear before cultivation, others increase with it.

H. MEIGS, *Secretary*
Farmers' Club.

Josiah Gregg. The following valuable letter from his was read.

New-York, July 24, 1847.

Dear Sir—I have taken the liberty of sending to the American Institute, a package of dried botanical specimens, which I beg leave to place at the disposition of this meritorious and honorable association.

As I presume this collection of plants can be of no important interest except to *professed botanists*, it is for the use of such in particular, that I submit it. I therefore desire, and respectfully solicit-

that botanists engaged in the researches of the sciences, be permitted to examine the collection at pleasure, and in such manner as may conduce to the development of the species of plant contained in it, always subject to the dispositions of the institution.

A memorandum accompanies the package, pretty fully explaining the manner in which the plants have been put up, etc. The labels attached to each specimen, show the localities and dates of their collection. It is, therefore, needless to add anything here, in explanation or apology for the very rude and imperfect style in which the plants have been preserved; in consequence, as well of inexperience, &c., as of very rapid marching during the period of the collection of most of them. However, I might here note in general terms, that the collections were made from Chihuahua to Metamoras, along the route of Parras, Saltillo, Monterey, Carmargo, &c. The total number of species embraced, I think to be about five hundred.

Supposing they might, in some degree, contribute to the elucidation of the species of plants, I have accompanied a number of samples of the wood of many of the trees included among the dried specimens of leaves and flowers; also some seeds for the same purpose, as well, also, that if any of them should be thought worth planting, they might be used in this way.

I had a collection of most of the kinds of rock found in the vicinity of Monterey, Saltillo, and some other places, but these have by some accident, been mostly lost. With the very few remaining specimens, I have sent samples of ores from two mines, one in Chihuahua, the other in Durango. What is perhaps worthy of note in the mines of this part of Mexico, is that east of the dividing Cordilleras, they are nearly all *plomosas*, (as expressed by the people,) that is, producing metal mixed with *lead*, but not with gold; whereas, those west of the Cordilleras contain little or no lead, and have generally a valuable admixture of gold. And, with regard to the *geology* of the country, there is, at least, one very remarkable feature, emphatically from Monterey to Saltillo and Parras, and that is, the *position* of the strata, which are seldom seen at an angle of less than 45° to the horizon, and often perpendicular. In the very streets and principal squares in the city of Saltillo, we note the surface singularly listed with the exposed edges of different colored strata.

If these collections should chance to afford the slightest interest or satisfaction to any member of your institution, or out of it, if deemed worthy by you, I shall feel very much gratified.

Permit me, through you, to express my deep sense of gratitude for the kindness and attentions bestowed upon me by the president and members of the Institute, as well as yourself.

I have the honor to remain,

Very respectfully your humble serv't,

JOSIAH GREGG.

To T. B. Wakeman, Esq. Cor. Sec. Am. Inst.

Henry Waterman, of Hudson, presented specimens of Corn Meab made from corn kiln dried by a new process of his invention; one specimen from sound corn, the other from badly mildewed corn. The latter but little inferior to the other. By Mr. Waterman's method, the mildew is destroyed by a competent heat, and entirely drawn off by a smut machine. The cost of the process is trifling. One machine can kiln dry corn for exportation at the rate of 5,000 bushels a day, and corn so prepared may be shipped in bulk. Mr. Waterman also exhibited a model of a steam engine, which is, in all its moving parts connected with a small wire, which connects with the valves, so that in the event of a break in any part of the engine, the valves are instantly shut, so as to cut off the entrance of steam into the cylinder, and so prevent that dangerous destruction of the machinery which results from the sudden release of the power from its restraint, a destruction often amounting to many thousand dollars, and with imminent danger of destruction to the boat and its passengers.

Richard Ferris, Esq. of Michigan, presented very fine samples of wool from his flocks. They are from a cross of the imported Leicester with the Irish ewe. These samples were much admired by the Club.

Mr. Wakeman. I am informed by Charles Henry Hall of Harlem, that grafts of trees, which are (the grafts) two years old, are found to produce fruit sooner than those of one year old. The common practice is to use the latter.

Junius Smith, of Astoria. The new wood is the best.

Dr. Underhill, of Croton Point. I use a small portion of the second year's growth at the end of my grafts.

Mr. Smith. So do I.

Mr. Wakeman moved for a committee of three to take charge of the Delegation to the Agricultural Convention to Greenport.

Carried—and Messrs Chandler, Williamson and Wakeman were appointed.

Benjamin Aycrigg. I have observed on the Allegany mountains and the Mississippi, the belts of forest arranged in the manner mentioned by Mr. Dawson. On the northern slope of the Allegany ridge are found the pine and hemlock, while on the southerly slopes, the resinous woods disappear and the hard woods are found. In the mountainous parts of Virginia, Chesnut oak abounds; an entirely new growth.

Samuel Allen. In our expedition to Long Island, we must take specimens of the soil of the barrens, near the now cultivated and fertile plantations. As a general prejudice prevails against those lands, we must be certain of our facts or we may be liable to ridicule. On the occasion of the late visit, I examined Shelter Island. It is only partially cultivated. I do not consider their large pastures as full evidence of the fertility of the soil. But I found there fair crops of grain and in some cases remarkably good. The pastures, however, may be made to do ten times as much as they now do. There are farms there of from 500 to 800 acres, and intelligent farmers there, too.

Charles Henry Hall. I am pleased to learn these fair evidences of agricultural success, due, no doubt, to the intelligence of the farmers in the management of all the manures within their reach. Long Island has long been deemed to have several hundred thousand acres of land not worth a farmer's notice. But all is well watered, and I believe that proper cultivation can render the greater portion of it rich. Perhaps it may be found to be a suitable position for our Agricultural School. Suppose that a thousand acres were used as range for the animals under the care of the proposed school of the American Institute. Intelligent men reside in that vicinity, the railroad convenient, the climate has many more fair and equable days than the main land, no tornadoes. It produces apples of a superior flavor. The celebrated Cobbett said, "Here we have apples falling from our trees in October, like golden balls," some weighing fourteen ounces. Such apples were never seen in Europe. Culinary vegetables of the finest order are produced here, witness those from the great garden of General Jeremiah Johnson. The Rye of Long Island is of the very best quality. No such rye bread as theirs can be found elsewhere. No rust is known upon their straw. Their hay is likewise of superior excellence. I will not believe that Hemstead plains will not

yield clover. Try it! I am willing for one, to labor in this cause. Let a proper committee be appointed to examine the soil of the island thoroughly.

John Harris, of Parkersburgh, Virginia, presented fine samples of wool from his flock, which lives there in the woods all the year, never requiring to be housed.

Edwin Williams. I invite those who please to go to the farm of Henry Shotwell, about two miles from Rahway, New-Jersey, to see a field of Teazles of his growing.

Charles Henry Hall in the Chair.

J. D. B. Debow, of New-Orleans, presented to the Club a number of his periodical work, "The Commercial Review."

Letters were received from Alpheus Bigelow, Jr., Western, Mass. stating his disappointment in the experiment of raising Lady Finger potatoes; from Gerrit W. Mosely, M. D., of New-Brunswick, N. J. with four specimens of marls and sulphurous clays, for analysis, from lands in South Amboy and Lower Freehold townships, Middlesex and Monmouth counties, N. J. Also a sample of prepared peat used for fuel, also a specimen of bog ore.

Subject, Wool, to be continued.
The Club adjourned.

H. MEIGS, *Secretary.*

August 17*th*, 1847.

Lewis G. Morris, Esq. in the Chair, H. Meigs, Secretary.

Mr. Meigs stated that in a conversation with Charles Henry Hall of Haerlem, he was instructed by the remarks of Mr. Hall relative to the best method of breeding poultry, particularly turkies. Mr. Meigs said that this was no humble subject, not while the turkey on every table finds his ardent friends and lovers of both sexes. It was worthy the strict inquiry of all whom it might concern, to learn how to raise this fine bird. He had taken the pains to write down minutely the method pursued by Mr. Hall, which was as follows:

Place the turkey eggs for hatching under a hen, the reasons for which are, that the moment the young turkeys are out of the shell,

the turkey hen inclines to range with them, and the young ones suffer from wet and fatigue. They are very delicate, and easily destroyed by bad weather.

The hen is much more vigilant in taking care of them. She warns them of approaching storms, or enemies, by a note which they understand; she broods over them with her wings. When the young turkies come out of the shell, they are to remain one day without any food. The hen must be put into a small coop, surrounded by a *little pasture*, contained within four boards around the coop; here they will be quiet. Each young turkey must have a little oil rubbed on its feathers. Dip the finger in oil, and gently rub it on the top of the head; take a feather dipped in oil and apply it lightly to the downy feathers, along the back and under the wing. This keeps them from injury by rains. Next, to stimulate their crops, introduce one or two black pepper corns into the crops of each, and duck them in a tub of water. Food must be prepared for them, not as is done in England, with curds, but with Indian meal. Make of this hasty pudding, let it evaporate almost to dryness. Take chives, cut them up very fine, sprinkle it moderately in the pudding, mix well, spread this food thinly on a board, and coarse sand well washed, on another board, so that the young turkeys can help themselves. They require little water. Continue this course for ten days. The hen must be fed with Indian meal mixed with boiled potatoes, and have plenty of water. The chicks must not be allowed to go out until the dew is dried up in the morning, and must be home before dewfall at evening. When the chicks are sufficiently well feathered, to be protected from the changes of weather, they will return to their place of feed regularly. They should always be fed on their return; this fixes a habit of regular return from their rambles. After this, they readily acquire the habit of seeking roosts, out of the reach of their enemies.

The same course of care and feeding is proper for chickens, which do not need, however, the pepper corn and oiling.

Young ducks should have the down sheared off from the bottom, to prevent injurious accumulation of dirt.

Great success and profit attend this mode of treatment of young birds.

C. S. Guillard, of Rondout. A letter from him on lime applied to farming purposes, was read.

A note from W. J. Cogswell, of Jamaica, declining invitation to meet the Farmers' Club in its recent excursion to Long Island, was read.

Mr. Meigs read the following extracts made by him from the London Morning Chronicle:

Flax in Ireland.

1710,	1,688,574	yards.
1750,	11,200,771	do
1775,	21,502,000	do
1800,	35,676,901	do
1820,	43,618,218	do
1825,	55,113,265	do
1835,	60,916,592	do

Imports into the United Kingdom in 1845, from foreign countries:

Fibre.—79,424 tons, worth twenty millions of dollars.

Flax seed.—Nearly five millions of bushels, worth about twenty-seven millions of dollars.

Oil cake.—85,890 tons, worth over three millions of dollars.

Total.—Thirty millions of dollars, drained out of Great Britain, for the produce of a crop which could be had at home.

Previous to 1825, linen was made from hand spun yarn. In 1839 there were in operation forty flax spinning mills, using steam power of about 2000 horses.

In the United Kingdom there were (in 1845,) 414 linen factories, of 12,000 horse power; 48,000 persons, and capital sixty millions of dollars; three mills consume annually 110,000 tons of flax.

Boston Navy Yard.

The Navy Yard at Boston, occupies about 9½ acres of ground, enclosed with a granite wall.

The principal buildings are a rope walk, 1,360 feet long, with a tar-house and store-house for hemp adjoining. About 55 tons of hemp are used here monthly; 50 men on an average daily employed The hemp house will contain 1,000 tons of hemp; 110 barrels of tar are used monthly. At this rope walk all the rigging for the

Navy is made; it is capable of making a great deal more, but as so few ships are held in commission, the machinery is not always in operation. The commerce of the country requires for its protection a navy, constantly in commission, full as our country now possesses, they are interested in commerce, and consequently in a navy for its protection; the more commerce we have, the more hemp is wanted, and it is believed that American hemp can be prepared as good as that of any quarter of the globe, and to any extent.

The dry dock at this yard is built of stone, (as all dry docks should be, both on the score of economy and usefulness,) it is large enough to receive a vessel 250 feet long; the water is pumped out of the dock by a steam engine, which also works the machinery for the gun carriage, and for a block shop. These shops make about one half the gun carriages which are used; the rest are made at Washington. There are four ship houses, under each of which a ship of the line can be built; under two of them ships have been built, and are now in a situation to launch, whenever Congress shall direct.

Capacious sheds have been erected, to preserve timber, spars and boats.

Store-houses, (more, however, are wanted) for the preservation and storage of all things necessary to equip vessels of war; a smithery and Plumber's shop, in which a great deal of work is done; in the Plumber's shop, men are employed in making and repairing machinery, working copper and tin, coating and finishing composition work; the machinery worked by steam; boat builders', spar makers' and coopers' shops; sail loft, in which sails for any sized vessels are made; rigging loft, paint shop, where a great quantity of the paint for the navy is prepared.

In the parks are collected a great many guns of different calibres, shot and anchors.

Everything in the yard is well taken care of, and the utmost economy is practiced.

From 450 to 500 workmen are daily employed in the yard. The waste steam as far as possible, is used for warming the buildings in winter.

The above was furnished by the chief clerk of the Navy Yard.

[Am. Inst.] SS

Oliver Smith gave a scientific account of the natural process by which the fibres of flax and hemp are glued together by albumen; and suggested that the probable effect of the new method of Mr. Anderson, might be not only to rid the fibre of the albumen, but kyanize the fibre, thus rendering it much more durable.

Mr. Wakeman desired the members of the club to take notice that an agricultural address was to be delivered before the American Institute and the public, at Mechanics' Hall, 472 Broadway, on the 6th of September next, in the evening, by the Hon. Nathan Burchard, of the Assembly of this State. This address will be of an unusually interesting character, we have no doubt, bearing, as it is expected to do, upon the new system of thorough scientific and practical agriculture.

Henry Drought. I am intimate with the established methods of preparing flax; and am skeptical as to any important improvements being made in the large way; it may possibly be done by the pound but not by the ton! Rotting by water is cheap, the weather is cheap, these have hitherto done it; and in Ireland labor is cheap. It is there rotted in about ten days, and then eight more are required to dry it, which is done often by speading it over young clover or on mown fields. The rotting can generally be done here in about seven days, (owing to the effect of the climate.) The tow is not lost, it goes into several fabrics of a cheap kind.

Mr. Wakeman moved that a special committee be appointed to examine closely the fitness of the neglected soils of Long Island, for agricultural purposes.

Carried, and the following committee was unanimously appointed, viz:

Charles Henry Hall, Charles L. Fleischman, Dr. Underhill, J. D. Williamson, Prof. Renwick, with power to add to their number.

Dr. Peck, of Long Island, on being named as one of this committee, declined, positively, on account of the general consideration among citizens that he had a private interest to serve on this subject. He said he had carefully examined a great many parts of fifty square miles of the condemned lands, and was absolutely convinced of its fitness for valuable cultivation.

John W. Chambers, in behalf of William Kent, of Prospect Hill Brooklyn, presented 16 potatoes, and the following account of their growth.

Mr. Wakeman moved that some of them, with the statement of their growth, should be presented to the New Haven Horticultural Society.

Adopted unanimously.

Mr. Chambers presented the following:

Last March, Mr. J. D. Williamson presented to the New-York Farmers' Club, some potatoes he procured from South America for the purpose of introducing new seed from a distant country, free from disease, where they grow wild. The white potatoes were cultivated on the fields of Bogota for one season and were as large as pigeons' eggs.

The red ones came from the province of Choco, about 250 miles from Bogota, and were about the same size.

Mr. W. procured about two bushels, which have been distributed throughout the United States. Mr. John S. Skinner, Editor of the Farmers' Library, gave them the name of the "Williamson potato."

A quantity of these potatoes were distributed at the Club with a request that returns should be made of the success of their cultivation.

Mr. William Kent, of Prospect Hill, Brooklyn, who has been most successful in raising seedling Dahlias, which have taken premiums at the Fairs of the Institute, was entrusted with eight. He has sent us the following communication:

PROSPECT HILL,
Brooklyn, August 18th, 1847.

By request of the American Institute, I send herewith one hill of potatoes from those I received from the Institute, and the mode I pursued in relation to their culture. I placed them in a slight hot-bed on the first of May, and when the buds got three inches long, I broke them off and put them into pint pots, one in each pot, and on the first of June I put them out, the 20 young shoots and the 8 original potatoes, they being as sound as ever, and have all grown very strong.

I put the young plants 20 inches apart in the rows, with one large spade full of manure, and the rows 3 feet apart.

The potatoes sent are the produce of one of the young plants, 16 in quantity.

I cannot see any difference between the buds potted and the old ones, in respect to produce. It will be observed that they are not quite ripe.

I do not claim any originality in the mode of growing them, but as I propagate Dahlias in a similar manner, I though I would try the experiment with the potatoes entrusted to me.

Yours, very respectfully,
WILLIAM KENT.

Mr. Wakeman. I take this occasion to call the attention of all the friends of American industry once more, to the culture of silk. The Convention of Farmers, Gardeners and Silk Culturists, is called for Monday, October 11, at 472 Broadway, in this city. It is believed that by early and extensive notice to the friends of the Silk interest, we can have a very important exhibition of the fruits of this young staple of our country at the Fair. That those interested may come to the convention or send specimens, together with all the useful facts relative to the subject. We feel unabated confidence in the peculiar fitness of our climate for silk growing; we need not repeat the immense value of silk as a staple. All are sensible how universally that beautiful product is used, and how vast the future demand for it must be.

We wish sincerely, that all should come to the Convention and enter into counsel for the extension of the culture, and display before the hundreds of thousands of spectators at Castle Garden, the best cocoons and the finest cloths of silk. But if any one is not able to attend, let him or her be careful to send the best silken goods and the most certain statement of facts in relation to its growth and manufacture.

A. C. Van Epps, presented reeled silk and cocoons from New Orleans and from Georgia, which were admired for their remarkable beauty. The eggs producing the cocoons, were from the Island of Cyprus. Some silk also, from Pass Christian, in Mississippi, raised on the native Mulberry of Louisiana; very fine silk indeed.

David Mills, offered for sale his farm at Newtown, on Long Island, two hundred acres, brought up to high condition by the labors of years, having some miles of stone fence dividing its lands. A stable with 100 stalls for cattle. The farm 5 miles from New-York.

Mr. Meigs, observed that this farm had been visited by committees of the Club, and their reports are in print by the Legislature. There is no doubt of the fine condition of Mr. Mills' farm.

Jordan L. Mott, exhibited fine corn on the stalks of 11 or 12 feet, also a very fine large oblong squash, from his farm.

Dr. Peck. I propose as a question for this Club, "Does continued cutting and carrying off timber impoverish the land?"

Adopted unanimously, as the question for next meeting.

Edwin Williams desired that the Secretary should write to Joseph D. Shotwell, Rahway Post office, and ask for a statement of his mode of raising the Teazle, of which he has just gathered a fine crop.

Carried.

Dr. Peck, desired that a circular should be addressed to Long Island farmers, asking them to state their knowledge and experience of the culture of the neglected lands.

Carried.

The Chairman called to the recollection of the Club, Buel's farm, on the celebrated Saratoga sands.

Edwin Williams. Mr. Schuyler said that some of those sands had been cultivated and were now worth $50 an acre.

Dr. Peck. During our revolution the pine plains of Dutchess county were offered for sale at the rate of one yard of *tow cloth* per acre, and are now valued at $75 an acre.

Edwin R. Campbell, of Ohio. We, in Ohio, are particularly interested in silk, I think more so than the people of any other State of the Union. We have many silk growers who will be glad to attend the Convention.

I confirm, by my experience, the valuable statements of Mr. Hall, as to the method of raising turkeys. I have also seen the advantage of using unburned lime, and its remarkably fertilizing effects on corn.

In Ohio, we stand A number One, in the raising of Flax. Preble county gives great crops of it. Preble gives this year one hundred thousand bushels of flax seed! of which ninety thousand go to market. We raise for the seed chiefly, and throw away the lint.

Subject for the next meeting:

"Does the repeated cutting and carrying off wood impoverish the land?"

The Club adjourned.

H. MEIGS, *Secretary.*

INTERIOR OF LONG ISLAND.

The attention of the Farmers Club of the American, Institue having been directed to the large tracts of wild and uncultivated land in the middle or central part of Long Island, commonly called the "plains," or "barrens," by Dr. E. F. Peck, who had resided several years on the island, and who, after a careful examination of large portions of these lands, arrived at the conclusion and opinion, that they were susceptible of high and profitable cultivation, without difficulty, other than the time and labor requisite to subdue and render fruitful all new lands, (whether on the island or elsewhere) and the Club having received, through the instrumentality of Dr. Peck, an invitation from the President of the Long Island Rail Road Company, James H. Weeks, Esq., to visit the Island, and examine the wild and uncultivated parts contiguous to the rail road, with a view to agricultural and horticultural purposes, to see if in the opinion of the agriculturists of the Institute, this large portion, now waste and wild, of the Island, can by ordinary means be converted into farms and gardens. The object being of a public nature, to wit: to learn the extent and quality of these long neglected lands, and worthy the notice of the friends of agricultural improvement, the invitation was accepted.

The 22d of July was selected for the time, and the company put on ane xtra train of cars, with a good engine, under gentlemanly conductors, and the direction of Mr. Ives, the superintendent of the road, at the service of the Club.

The information obtained, and the interest awakened by this visit was so great, that it was proposed on the 4th of August to be repeated

The excursion was proposed to occupy a day. The members, with invited friends of the good object from New-York, were to meet at the South Ferry, at a quarter to nine, A. M., at Brooklyn, and be augmented by the delegates from that city, and to receive additions at Jamaica and other places, as they advanced. The day proved one of the most lovely of summer's glorious daughters, a goodly company answered to the call, and two large cars of excellent style were furnished for the excursion. Being suitably supplied with both spade and pen, both agriculturists and editors having furnished a fair quota from their departments, at the appointed hour the steam horse was snorting through the tunnel of Brooklyn, proud to lead on this scientific band.

The highly cultivated region from Brooklyn to Jamaica, and Hempstead, presented a great variety of the fruits of the earth in great luxuriance and abundance. The richness of the fine fields of corn was remarked with peculiar gratification. Here and there farms were pointed out, now teeming with heavy growths of grass, corn, oats, &c., that a few years ago, were barren wastes. Many anecdotes were circulated from personal knowledge, (for there were of the old settlers along, as well as a goodly number of the men in the very vigor of manhood,) of farms here and there, and of neghborhoods now producing great crops, and worth $100 or more an acre, that since the remembrance of the narrator, were almost unproductive, were bought for five, ten or twenty dollars an acre, and raised by wise and right cultivation, to the first rank of profitable farms.

That portion of the Island through which the railroad passes, east of Jamaica, is mostly uncultivated, until reaching Riverhead. In the towns of North Hempstead and Hempstead, there are some 17,000 acres, know as "Hempstead Plains," and which have been long considered by many, as of little value, not worth cultivating, but there is something more than the qualities of the soil, something more than its capabilities for agriculture, involved in this matter, and has not

been understood by the great numbers of people who have been so much surprised at the barren and sterile appearance of that part of Long Island, and which is undoubtedly the true cause of its present waste and neglected condition; it is the title, or rather its want of title, it being held by the town as commons.

The following brief account may not be unacceptable to those interested in the prosperity of the Island, and may serve to explain in some degree, why nothing but wild grass grows upon the plains:

Mr. Thompson says, in his very interesting history of Long Island, vol. 2, page 48: "In April, 1808, a bill in chancery was filed by Samuel Denton, and others, to obtain their right to, and possession of the plains, &c., as heirs of, or purchasers from, the original patentees," the Dutch patent of 1640, probably. After a long and learned argument, the chancellor dismissed the bill; and upon an appeal, the court of errors affirmed his decision. Another bill was subsequently filed by the parties who claimed to be the legal representatives of those who contributed to the expenses of obtaining the patent of 1685, from Gen. Dongan, and this was also carried to the court of errors, and decided against the claimants, in 1818. Jan. 10, 1821, another bill was filed by the town of North Hempstead against the town of Hempstead. This case was also carried to the court of errors, and there decided against the complainants, (for the particulars of these law suits, see the history of Long Island as above quoted.)

Thus it will be seen that there are reasons why this land is so unproductive, besides the quality of the soil; it cannot be sold but by a popular vote of the town. Several plans, at various times, have been proposed, by which these golden acres, (for such they are in truth,) can be placed within the reach of those who would cultivate them, but none as yet has been approved by the inhabitants of the town.

The railroad passes through the middle of this plain to Hicksville. The summit level of the road at this place, distant 27 miles from New-York, is 142 feet; the distance from the shore is about seven miles; from Hicksville to Farmingdale, is five miles; and very little cultivation is seen along the road.

From Farmingdale to Riverhead, nearly 40 miles, at the opening of the road was an entire wilderness, now many small clearings have

been made along the line of the road, and the land cultivated; and in every case where the trial has been made, the result has been most favorable, the land producing equal to that of any other part of the Island This wild region is about forty miles long, by about seven wide, containing 280 square miles, almost every acre of which can be cultivated without any difficulty or secret. *There is not a single fact* that can be brought against this assertion; indeed, all science, analogy and experiment, go to confirm its truth.

The railroad passes through this wilderness a little to the south of the "hills," or ridge of high ground, running through the Island from east to west; and that some idea may be formed of the situation of this region, that it is not a "dead level," may be seen by a reference to the following table of height and distances of the railroad, furnished by James Shipman, Esq., engineer of the road, and published in Prime's History of Long Island.

	Distance.	Height above tide water.
Brooklyn termination,		7 feet.
Bedford,	2¼ miles,	73 "
Watering place near east New-York,	2¼ "	83 "
Jamaica,	6 "	40 "
Hempstead branch,	7 "	103 "
Hicksville,	8 "	142 "
Farmingdale,	5 "	63 "
Suffolk station,	13 "	90 "
Medford station,	11 "	82 "
Millville,	5 "	40 "
St. George Manor,	7 "	46 "
Riverhead,	7 "	32 "
Mathtuck,	10 "	16 "
Cutchogue,	2 "	47 "
Southold,	5 "	42 "
Greenport,	4 "	10 "

It will be seen by this table, the ground over which the road passes is high, from Hicksville to Riverhead, and the average distance from the railroad to the shore of the great South Bay, is probably about 5 miles, which would be a descent of about twelve feet to the mile, from the road to the shore.

An abundant supply of the purest water can be obtained in any part of this portion of the Island, at depths from 12 to 60 feet. At

Farmingdale the wells are 20 feet deep; at Suffolk Station, 90 feet above tide water, they are 40 feet, with never failing water. It may not be uninteresting here to state, that very near this point of the road (Suffolk Station,) about two miles to the north, are found the head waters of the Nissequgue river, which rises in the north part of the town of Islip, and flows northwardly through Smithtown into Long Island Sound. The locality in which the waters of this stream arise, is called by the Indian name of "Hauppague," which means in the aboriginal language, "sweet waters," and is as justly expressive of the nature and qualities of that to which it is applied, as any term of Virgil or Homer; as the whole region abounds in springs of the purest and sweetest water; in some places gushing suddenly and in great abundance out of the ground. It may here be mentioned that this is the only place from which a supply of pure and wholesome water can be had for the city of Brooklyn, and the west end of the Island. The locality is such, and the formation of the ground such, that a reservoir of vast extent and capacity could easily be made, and the supply of water would be most abundant and unfailing. The water could be raised as at Fairmount, or by the steam-engine, as at New-Orleans, and then conveyed to Brooklyn, a distance of about forty miles, if the wants of the city hereafter require it. The expense and labor of such a work would be a great deal less than the cost of the Croton, probably not more than one-third as much, by reason of the difference in the face of the country over which it would pass. A few miles east of this, and near the middle of the island, is the famous Ronkonkama of Indian memory, now commonly called the Great Pond, and is one of the most beautiful sheets of water on the island. Says Mr. Thompson, (Hist. of Long Island, vol. i., page 448,) "It is certainly one of the most remarkable features in the topography of Long Island, the first discovery of which excites in the stranger equal surprise and delight.

"It is difficult to conceive of an object more gratifying to the admirer of nature, or the lover of beautiful scenery, than is here presented to his view, situated in the midst of an extensive forest. The first sight of its placid and silvery surface creates astonishment and rapture in the beholder."

This gem of "the first water," thus set in with wild woodlands and forests, is about a mile in diameter, of singular transparency and of wonderful depth, and has no visible inlet or outlet. About a mile and a half in a southwesterly direction, and about thirty feet

below the surface level of Ronkonkama, rises very suddenly, or is very soon made up from what may be called a small surface of wet ground, a beautiful stream, which being fed by innumerable springs, soon becomes large, and flows southerly through the woods and swamps, a distance of about eight miles, into the Great South Bay. This, called Connetquot Brook, is thought by many to be the subterranean outlet of Ronkonkama Pond.

There is in the Hempstead plains about 17,000 acres of upland, or upon the plains, exclusive of the marshes, meadow, and low grounds, proper, in the towns of North Hempstead and Hempstead, now wholly uncultivated and unoccupied, and this too within, by the railroad, a little more than one hour's ride from New-York city; and almost the entire surface of this tract of land can be cultivated without any difficulty or secret, notwithstanding opinions to the contrary. Remove the difficulty *above* the soil, of title, and there will remain none *either in or beneath it.*

The number of cultivated or uncultivated acres in Suffolk county is as follows :

	Acres.	
In Islip, unimproved,		63,984
improved,	8,016	
In Smithtown, unimproved,		27,063
improved,	10,937	
In Brookhaven, unimproved,		117,359
improved,	35,141	
In Southampton, unimproved,		68,395
improved,	23,105	
In Easthampton, unimproved,		52,673
improved,	17,827	
In Shelter Island, unimproved,		5,165
improved,	4,836	
In Riverhead, unimproved,		25,198
improved,	12,302	
In Southold, unimproved,		29,149
improved,	23,351	
Huntington, unimproved,		50,968
improved,	32,532	
	218,000	449,953

The population in 1845, was 34,579.

SECOND AGRICULTURAL EXCURSION OF THE FARMERS' CLUB

To pursue the inquiries in relation to the immense tracts of unimproved land on Long Island.

The object of the second agricultural excursion was "to pursue the inquiries in relation to the immense tracts of unimproved lands on Long Island" A large number of public spirited and distinguished men of the city and Island being invited to be of the company, a train of cars being very generously furnished for the purpose by the Long Island Railroad Company, the plan being to hold several meeting at different places, and a convention of farmers at Greenport, with an extensive examination of soil, products, &c., and trip by steamboat to Sag Harbor, to occupy two days in the prosecution of this important investigation, the company started from the depot at Brooklyn at 9 A. M. of the 4th, and returned at 9 P. M. of the 5th August. When the train reached Greenport at 5 P. M. the number had swelled to over 170 gentlemen, among whom were the Hon. Messrs. Ogden Edwards, John W. Lawrence, A. Stewart, Professor Renwick, Drs. Manley, C. Miller, Van Hovenburgh, James Depeyster, Gen. F. Pentz, A. B. Allen, B. L. Benson, Curtis Holmes, D. M. Prall, Col. Tylee, M. G. Leonard, T. Spofford, of N. Y., Hon. Judge Hammond, A. Spooner, James Walters, of Brooklyn, William Simmons, of East N. Y., Rev. Dr. Schoonmaker, J. A. Herriman, J. Rider, J. L. Reeve, Dr. Peck, C. S. Watrous, of Jamaica, Hon. Messrs. P. Willets, J. Bedell, J. W. Smith, of Hempstead, A. G. Carll, Jericho, J. B. Smith, of Smithtown, J. P. Carl, of Babylon, N. Tuttle, of Yaphank, Benjamin Strong, of Brookhaven, George Miller, of Riverhead, R. Smith, late sheriff of Suffolk County, with two distinguished visitants from the Celestial Empire, Esing and Sumstug, of the Chinese junk, and President Weekes, of the railroad company. The gentlemen of the Island joined the excursion at different places, as the train progressed. Many of the inhabitants and neighboring farmers of the places where the train stopped, had collected in expectation of the visitors, and very numerous facilities were furnished at various points, to aid the examination, and furnish the evidence and information sought.

At Suffolk Station, being in a central part of the extensive pine lands, more time was taken to gain information, a meeting was or-

ganized and various enquiries made, to which answers were given by residents of the vicinity or persons well acquainted with the whole region, and that part particularly.

At this point the railroad is ninety-two feet above the level of the ocean, and about thirty feet above the level of Ronkonkama pond, which is a beautiful sheet of the purest water filled with fish, particularly the perch, distant N. E. about four miles. The soil here, or the upper surface of the Island, has the usual characteristics of the whole extent of these unimproved lands, and of the whole Island to a great extent. First, there is a coating of vegetable mould several inches deep, then a yellow loam and sand mixture of one, two, or three feet thickness, well adapted to be the basis of good tillage, and of a most easy kind.

At Millville, fifteen miles further on, or nearly sixty miles from Brooklyn, a pedestrian excursion of a mile or so from the road, led us over the beautiful stream that rises not far east of the pond just mentioned, called Connetquot, which means the stream of the Pines, which is a very large sized trout brook, abounding with that beautiful and pure fish in great perfection. At a little distance is the very pleasant residence of the President of the Railroad Company, who introduced the visitors to his family and mansion, and welcomed us to the beauties of these lovely and quiet scenes. Having enjoyed this adventure, a few miles further brought us to Wampmissic, a region of similar beautiful locality and undulating plain lands with those of Suffolk Station, the examination of which resulted in similar testimony to the susceptibility of profitable high cultivation.

From this point the lands are more uneven till you reach Riverhead, and covered with a slight coat of vegetable mould, and then the usual layers of earth of other parts of these plains succeed. At Riverhead commences the rich corn fields and other fruits of good cultivation of the east end of the Island; but all this is recent, as it is not thirty years since this region did not produce corn and grain enough for its own consumption. Here lands were pointed out richly laden, or from which great crops had been taken, and in one case a field yielding last season 140 bushels of corn to the acre was pointed out, that a few years before was bought for a trifle and supposed to be barren. Here you come into the vast region where the mossbunker fish, a kind of herring, or old wife fish, is used in myriads for manure.

From Riverhead to Greenport, the cultivation is good and the products bountiful, but said to be much better at some distance both sides of the road, or particularly on the north, than along the rail road.

At Greenport, where the train arrived about five o'clock P. M., a convention had been called that took place in the evening in the Presbyterian church, which was generously and rightly opened for this occasion.

The company were soon refreshed with bathing and dining at the different public houses, of which there are several in this very beautiful watering place, to all of which parties of the company resorted, and being well suited with their entertainment, left them with sentiments of much commendation, which many have very freely expressed.

After some pleasant excursions in different directions, by different parties of the company, the bell called them into convention for the evening. The Hon. Philip Schuyler, of New York, Chairman of the agricultural department of the American Institute, was chosen President of the convention, and four Vice Presidents.

Hon. Messrs. Wm. Jones and P. Willets, of Queens county; Dr. T. Osborn and W. C. Smith, of Suffolk county; James Walters, of Kings county; John L. Lawrence, of New York; Francis Barretto, of Westchester county.

Messrs. Albert G. Carll, of Queens county, Henry Meigs, and T. B. Wakeman, of New York, were chosen Secretaries.

The President, on taking the chair, expressed the great interest of the American Institute in the promotion of agriculture, and that it was desirous to gain information on the subject from all places, to examine results, and to diffuse for public advantage, the knowledge of whatever of excellence or improvement it discovered or acquired. This convention was here in furtherance of this great and good object, and was desirous to hear from the farmers of this vicinity, any facts and general information on the subject, and especially whatever would bear towards the great object of the present enquiry, as to the character of the extensive uncultivated region of the Island, over which the cars had brought most who were there assembled. As information was what was sought, it was hoped that all would communicate freely what was judged important, without the formality of motions.

Mr. Meigs, of New York, complied with the request to address the meeting, in a speech full of information and eloquence. He began by adverting to the views of his early friend, that wonderful man, a native of Long Island, who in Congress used to be styled the "library," the late Dr. Mitchell.

Dr. M. loved Long Island, and believed her richly stored with all those materials, calcareous and others, necessary for high and profitable cultivation. He made no exception to exclude the plains.

Mr. Meigs stated many facts as to the Island, from the geological survey of this State, which originated from the American Institute on motion of Mr. Edwin Williams, who was then present; all which went to show that the Island not only had sand, gravel and loam, but varieties of clay, in many parts very abundant even for bricks, and in all so as to furnish what was requisite of this ingredient, for a productive soil.

Before the revolution, Long Island suffered from bad culture and shallow ploughing, and the system of getting all you can and give nothing back to the land. He alluded to Mr. Taylor, of Virginia, who demonstrated that right culture would restore even the waste lands of Virginia, and all others; culture proceeding on the simple process of nature, by which the forest enriches the land year by year, by its falling leaves and decaying limbs, yet increases continually its own growth. This mode of culture was all that was requisite to make Long Island, in every part, a most productive region. For the various productions of the garden, field and orchard, it was highly adapted, and also for the vine and the silk mulberry.

We can give but a brief abstract of some of his thoughts, with none of his animating eloquence.

A call was next made for Dr. Peck, of Jamaica, who has gained some just reputation for his good interest in the culture of Long Island, particularly in the improvement of the immense plains now lying almost waste and sterile in the centre of the Island, on each side of the railroad.

The Dr. said, Mr. President, sir, you really do me great honor, to call for anything that I can say, when there are here present, so many gentlemen, so highly distinguished for science, learning and talents, and who can furnish richer gratification to the audience, yet as it was said by the celebrated Dr. Watts, that it could not be expected

that a man could know everything, however great in many, therefore being called, he would present some of the results of his researches and inquiries in relation to these extensive uncultivated lands.

It might not be uninteresting to some here present, to give some account of the extent of this part of the island, although, to the people and to the inhabitants of Suffolk county, it will not be new information to say, that this county is more than 110 miles long, by an average breadth of more than 10 miles, containing more than 1000 square miles; more than 640,000 acres of land. By the census of 1845, a little more than 200,000 acres were returned as cultivated, with a population of 34,579; leaving as uncultivated or unoccupied 450,000 acres, the greater portion of this vast tract, as you have seen to day, lays along the borders of the railroad between Farmingdale and Riverhead, a distance of 40 miles, and being in width about seven miles, containing, therefore, about 280 square miles, or 180,000 acres of land, with the railroad passing through and near the centre of it, bringing it almost into immediate and constant contact and communication with the great cities of Brooklyn and New-York.

Thus the extent of these lands is remarkable on this island, so delightfully situated as to climate and contiguity to the continent, and the best of markets also; that there should be such a tract of land as we had many of us passed through this day, was, he confessed, when he first heard it, a matter of great surprise and wonder. To his inquiry why is it so? He received the answer that they could not be cultivated, they were barren. His own experience in tillage, and acquaintance with land, when he had ascertained the nature of the soil of this vast extent of land, and examined it to his satisfaction, told him that it could not be so; that it was valuable for farms and ought to be brought under cultivation. Being so extensive, a tract of many thousand acres, and surrounded by a well cultivated portion on both sides, it was an inquiry of some curiosity as to the origin of this disparaging notion of these lands. He found from history, that this was not their reputation in the last part of the 17th and in the early part of the last century. A work of 1670, proved this, a rare and curious work, "Denton's History; or a brief Description of New-York, formerly called New-Netherlands." (This has been called one of the germs of American History, being the first printed description, in the English language, of what is now the great, wealthy and populous State of New-York.)

Long Island is not spoken of in this, or any subsequent work for a great many years as being of poor soil, or any part as barren, as he had been able to find; that it was at this early period that it obtained its distinctive appellation of the "Garden of America;" it is everywhere spoken of as being exceedingly fruitful, with a pleasant and healthful climate, and beautiful streams and bays, abounding in all kinds of fish and water fowl. Denton says, "Long Island, the west end of which lies southward of New-York, runs eastward above one hundred miles, and is in some places eight, in some twelve in some fourteen miles broad; it is inhabited from one end to the other. On the west end is four or five Dutch towns, the rest being all English, to the number of twelve, besides villages and town houses. The island is most of it a very good soyle, and very natural for all sorts of English grain, which they sowe and have very good increase of, besides all other fruits and herbs, common in England.

"The fruits natural to the island, are mulberries, posimons, grapes great and small, huckelberries, cramberries, plums of several sorts, rasberries and strawberries; of which last is such abundance in June that the fields and woods are died red: which the country people perceiving, instantly arm themselves with bottles of wine, cream and sugar, and instead of a coat of male, every one takes a female upon his horse, behind him, and so rushing violently into the fields, and never leave till they have disrobed them of their red colours, and turned them into the old habit. The greatest part of the Island is very full of timber, as oaks, white and red, walnut-trees, chestnut-trees, which yield store of mast for swine—also maples, cedars, saxifrage, beach, birch, holly, hazel, with many sorts more."

Then follows the enumeration of a great variety of herbs and flowers which the "country naturally affords."

"Yea, in May you shall see the woods and fields so curiously bedecked with roses and an innumerable multitude of delightful flowers, not only pleasing to the eye, but smell, that you may behold nature contending with art, and striving to equal if not excel many gardens in England."

Such is the description given of this island by all the early writers.

The Hon. Gabriel Furman, in a very able and interesting address delivered at Jamaica, October 10, 1844, before the Queens County

Agricultural Society says that the first printed history of the New-Netherlands, published by Vanderdonck, at Antwerp, in 1650, gives a similar description of the fertility of Long Island.

Denton goes on to say, "towards the middle of Long Islanc lyeth a plain, sixteen miles long and four broad, upon which grows very fine grass, that makes exceeding good hay, and is good pasture for sheep or other cattel; where you shall find neither stick nor stone to hinder the horse heels, or endanger them in their races, and once a year the best horses in the island are brought hither to try their swiftness, and the swiftest rewarded with a silver cup, two being annually procured for that purpose. There are two or three other small plains of about a mile square, which are no small benefit to those towns which enjoye them." This is the great Hempstead Plain, that is now considered by some as so barren and worthless. They were then not considered so, nature had made them highly productive of "very fine grass" that "made exceeding good hay," and "very good pasture for sheep or other cattel," and that they were no "small benefit to those towns which enjoyed them." What benefit would it have been to those towns at that early age, to possess a few miles of barren land? It must have then been productive of all that it is described as producing; and been considered as valuable, or this testimony would not have been left. The Hempstead Plain was regarded as a great curiosity. Judge Furman says, in his notes on Denton's history, that there was scarcely a traveller of any note, that visited this part of North America, who does not mention these plains, and regard them worthy of description. The Rev. A. Barnaby who travelled through the middle colonies in 1759, visited them in July of that year, and speaks of the great interest manifested, by the inhabitants of New-York, at that period, almost one hundred years ago, in reference to this interesting spot, "*the Plains*," and observes that strangers are always carried to see this place, *as a great curiosity, and the only one of the kind in North America.* This last remark, says the Judge, which now appears singular to us, was then true in reference to the knowledge possessed of the interior of the continent; the immense plains, or prairies of the Far West, were then unknown. It thus appears that the Island in 1670, and 1757, was not known or regarded as containing large barren and sterile tracts of land, that have been the dread and horror of so many since; and the island was well known then, and all the middle parts, east of Hempstead Plains, were with a very small exception, covered with heavy forest trees of very large size in many places, none of which now remain, save here and there one that has escaped the woodman's axe, and stand as the

venerable representative of an age, and generations that are past. That part, along and through which the Railroad runs, that which many who now pass over it, and without a knowledge of these facts, supposed to be barren, and say, that the trees and pines now growing there, are of a stinted growth, a dwarf kind; that the soil is incapable of producing larger. There can be no greater mistake, no greater error, yet this is the error that is promulgated and perpetuated. That the appearance along the line of the road is dreary and desolate, is admitted, and this appearance can be explained without any reference to the soil being barren or deficient, the difference in the height and size of the pines now growing there, being all sizes, from three feet to sixty feet high, is not the result of a variety of soil, as would at first view seem, but is accounted for wholly, by the time that has elapsed since the ground on which they grew, was cut or burnt over, (one or both,) the growth of pines now on the middle region of the island, is of all ages, from one to fifty years old. This will explain without any secret or difficulty, the appearance that is everywhere presented to the stranger and traveller, as he passes on the railroad through the island. A reference to a few facts on this point, will help to understand this subject better: First, the very large amount of charcoal that has been made and sent to New-York and Brooklyn markets and from off this barren part of the Island, shows that there must have been a large quantity of the woody product to convert into that article; and next the amount of wood in form of firewood, or cordwood carried from Suffolk county in times past, is prodigious, and it has been constantly taken off from the wild lands, and a great deal from this very land.

Rev. Mr. Prime, in his recent history of Long Island, estimates the wood carried to market from Suffolk county, at 60,000 cords annually. I do not know from what data he makes the estimate. It is thought by those who have had an opportunity to form an opinion, that it is low, but even at this, and allowing for the quantity requisite to supply the inhabitants with fuel, (35,000 inhabitants in the county) and what is cut and used for ship timber and building purposes, that the county must long since have been deprived of its wood and timber, as this is not a new state of things, a new process having been going on for 100 years or more, had there not been a very great power of reproduction in the land and its soil, on which the wood and timber grows. From 18 to 20 and 25 years form the ordinary period for the reproduction of the woody crop, when it will do to cut again. Now it is evident that land upon which trees will thus grow, is not destitute of the principles, the materials, the sub-

For this purpose the American Institute was desirous to obtain a tract on the Island. He believed that it would be a great gain, if some of the owners of these lands would give the Institute 1,000 acres, to be improved in this manner. Their quality would be thus tested, and if the Institute failed to make them realize the object of their donation, he would engage that they should be returned. He urged the making of this donation.

Prof. Renwick, of Columbia College of this city, next came forward, at the request of the president; and in a brief but very excellent address, stated, that in his early youth he had been accustomed to hear Long Island honored with the appellation of the "garden of America." He had early visited and taken interest in the peculiar tract of Hempstead Plains, and subsequently had witnessed an analysis of its soil, made in his own laboratory, which had proved it to partake of all the constituents of a fertile soil in large proportions, though some proportions existed in insoluble matter, not suited to support vegetation in its present state, but susceptible of being decomposed by quick lime and other substances, and brought into use as the demand was made for it in the process of cultivation. Of the shrub oak lands, he had not the same knowledge; but it was a fact, that in many parts of the country, those lands called oak barrens, and neglected for a time, have been found to be the best wheat lands, and these might prove of the same character. It was strongly his conviction that these lands were susceptible of profitable cultivation.

Prof. Mapes followed in an address replete with science and facts, of which we can hardly give more than a notice. His views on these lands were favorable to their improvement, and as the scientific theory of the growth of plants, which he detailed with great clearness, and accompanied with strong proof of its truth, showing that a ton a year might, by leaving another ton to the acre to act as manure for it, be taken from an acre for twenty years in succession, and at the end of the time not any diminution be discoverable in the soil, but an actual accession be made to its fertility. It proved that the bulk of vegetation was derived from the atmosphere. From this view it was strongly inferible, that with a suitable portion of manure, which could be obtained with peculiar facilities, these lands were sure to yield good rewards for cultivation.

Mr. Dewey remarked that, as three particulars of much importance in estimating the value of these unimproved lands had been

adverted to, he would ask the favor of drawing the attention of the convention to them. These were ease of tillage, safety of the crop, and healthfulness of the climate.

Far less labor was required to cultivate them; less strength of team to plough them, and less effort to keep them free from weeds than was required by the strong clay and marly wheat lands of this State and the west. If more manure was required for a good crop, the ease of tillage would fully compensate for this. The safety of crops in these lands, or lands of this character from loss, either by drought or wet seasons, was far greater than in the wheat lands of Genesee Flats, and most of the reputed rich lands. On these lands, very seldom indeed, was a crop lost from these causes. The climate was also without a rival in the northern and western States for pleasantness and health. These three considerations might well make these lands most attractive to those seeking for good farms. For the vine, the mulberry, as well as all garden productions, these advantages, with the others already proved to belong to these lands, gave the assurance of their superior excellence, and with the facilities now existing of this grand artery of transportation, furnished so completely by the Long Island railroad, it was most certain that but a few years could transpire before the whole region would be made to flourish with the highest glories of agricultural productions.

Geo. Miller, Esq., of River Head, expressed his thanks for this visit of the Institute to this part of the Island, on this object; and testified to the capacity of the Island to pay for cultivation. The improvements in that vicinity had been great within the last fifty years.

Dr. Underhill, of Croton Point, was then called for, who gave the Convention one of his most instructive, eloquent, and interesting addresses. We can do no justice to it, but simply assure the public, that it was to the point, and must confer upon it a lasting benefit. It most effectually put down the prejudice against the Island, by the common charges against it, that its soil was leachy, the manure greatly lost by being carried down into the earth. He showed to be a great error; that for the most part of the ingredients of manure, the general law of nature was, to leach upward downward. More was lost by this law, made to bring the surface, where they were wanted for vegetation, that t' contact with the air, which carried them away. He wick both concurred in the sentiment, that where

pa
drew
and P
an effuv

the atmosphere, from fish or other manure, there was just so much loss, and that when the fish was left on the surface, seven-eighths were lost. Manure should be covered deep. Its power would then act upward. If thus cultivated, he was willing to stake what reputation he had as an agriculturist, on his opinion, that these lands were susceptible of most profitable cultivation, for the vine, the peach, the apple, and other orchard fruits, and usual productions of the garden and field. There was a hearty warmth and fullness in his utterance that showed his soul to be imbued with a deep sense of the importance of these lands for culture and utility to the Island and the city.

Dr. Peck said he was pleased and highly gratified with the views and theory of the operation of manures, expressed by the gentlemen who last spoke, (Dr. Underhill.) He thought there was much truth in them, and when applied to the use of manures on Long Island, would be a great service to the cultivator of its soil: and after some general remarks upon this subject, he proceeded to notice the suggestions (made by Mr. Spooner,) of the importance of *high cultivation* on the lands of Long Island, and in support of the position thus taken, went into an argument highly interesting, and adduced several well substantiated facts and the complete and illustrative of the possibility of high cultivation, to cultivate in a high perfect success that had attended every attempt ever known or heard of. ee, the soil of Long Island, that he had Dr., were Mr. Van Sicke particular instances referred to by the took the premium from the arm in Jamaica, Queens county, that cultivated farm, having been by Agricultural Society as the best per year for manure and labor, ted at an expense of about $1100 of a gentleman in Smithtown, w roducing $3,300. The second, and proverbial throughout the neigh land of a light sandy soil, sterility, and which had been purchased, for its barrenness and $12.50 per acre, was cultivated so a year before at a cost of oats per acre, and being planted or sow oduce 100 bushels of immediately after the oats, yielded a clear Ruta Baga turnips after paying all and every expense of every k of $29 per acre, nure. This was done without any attempt at labor and ma- gentleman formerly a merchant in New-York. m crop, by a account of this was kept by persons competent, st accurate integrity. undoubted

The Dr. afterwards noticed another case, published Mr. Prime's History of Long Island, from volume 1 of th. y.

tions of the Society instituted in the State of New-York, for the promotion of Agriculture, Arts and Manufactures, in Feb. 1791, from a paper entitled "Observations on Manners," by Ezra L'hommedieu, Esq., read in March, 1795. In this paper there is a statement given of the use of fish called Mossbonkers, on land, by Mr. Downs, of Riverhead, by which a very large crop of Rye was produced; indeed, it is probably the largest crop on record of the kind—at the rate of 116 bushels to the acre, and at a profit of $85 per acre, after paying all expenses. The details of the case may be seen by reference to Mr. Prime's History of Long Island, page 75.

These cases and facts, said the Dr., are of great importance, and establish the truth of the positon taken by this gentleman, (Mr. Spooner,) the possibility and expediency of high cultivation on Long Island, as they were made under similar circumstances, and in distinct and remote portions of the Island, and on soils that fairly represent the average quality of the land, including the plain lands, being one at Jamaica, one in the southern parts of Smithtown, on the borders of Islip, on land of light, hardy soil, and proverbial through the neighborhood for its barrenness and sterility; the last at Riverhead, on quite the eastern part of the Island, and distant one from the other 30 and 60 miles. The same results, viz: great yields and profits, by different processes, different modes of culture and manuring.

Here was made a very interesting statement of the height or altitude of these lands, and the influence of cultivation upon climate in this latitude; the influence of light, air and heat that are admitted to the soil when the surface is cleared of the forest; that the middle parts of the Island will be found better adapted to the culture of fruits and tender plants, than the shores, being less exposed to the cold and bleak winds that sometimes blow from the ocean.

After describing the extent of this wild region, this almost doomed land, this *Idumea* by public opinion, the lonely and bewildering roads that perplex and embarrass the stranger or traveller, who even now, at this period, attempts to cross the Island in its wildest places; the desolate appearance that this region everywhere presented, after the great fires had passed over the Island two or three years ago, every thing being burnt, scathed and blackened by the fires and flames, until every vestige of vegetable life was destroyed; of the rapidity with which vegetation reappeared, when the suns and showers of spring and summer returned; thence argued that a soil, a land

that could thus so soon and so rapidly reproduce vegetable life, must have power and fertility sufficient for cultivation; and then said:

What makes one part of the Island so fruitful and fertile, and another so barren and sterile? if it be not cultivation. Why is there seen on one field the most luxuriant growth of "golden grain," the most verdant meadows smiling in the sun, and another, right by side of it, with nothing but a single fence between, nothing but barrenness, nothing but wild grass, literally "briars and thorns?" How can this difference be explained, if not by culture and tillage? "Oh," says one, "my farm, my lot is a good one, good bottom; my neighbor's there, is a poor one, that field next to mine has got no bottom." What an absurdity, who believes for a moment, that this Island is different from all other parts of the earth in its structure—that it is thus laid out under its surface in squares, in mosaic, a good bottom here, and a poor one there? And if so, by what sagacity do these men discover the exact line of demarcation, so as to run the line of their fences precisely where the separation is made, so as to take the good, and leave out the bad? This would be a secret worth knowing.

Among other things, Dr. P. spoke particularly of the manner in which the Island is watered; being as a general fact so bountifully supplied with the purest and best of water; that from its geological structure, the compact sands, and fine pebbles, forming the main body of the Island, served as the most perfect filter, and that nothing but the pure element itself could get through it; hence the waters of Long Island are unsurpassed, unequalled in any other part of the country; clear, transparent and beautiful streams flowing all over the Island.

"The streams unfailing in the summer's draught," and rivalling in brilliancy and purity, Milton's "pellucid streams," "Abana and Pharpar, rivers of Damascus."

Mr. Meigs then offered the following resolution:

Resolved, That the thanks of this convention be presented to the President and Directors of the Long Island Railroad Company, for their distinguished politeness in affording to the members of the Convention of Farmers, and others, at Greenport, a free passage through Long Island, which was passed unanimously.

Mr. Carll presented a resolution for a vote of thanks to the trustees of the church, for its use that evening, which was passed. Some spirited remarks in favor of the objects of the convention, were made by Dr. Manly, of New York, when on motion the convention adjourned to meet next evening in Jamaica.

The whole proceedings were of a very interesting and satisfactory character, giving the strongest impression that the conviction had become full in the minds of the whole convention, that these uncultivated lands of Long Island presented great advantages and high inducements to be sought by those who wish to invest money in lands, and enter into the pursuits of agriculture.

Before the separation of the meeting, a notice was given of the semi-monthly meetings of the New York Farmers' Club, and invitations given for a free and welcome attendance of all farmers and others interested in agricultural improvements.

Thus closed the first day.

The appointment for next day was made to take the boat for Sag Harbor, at half past eight P. M., leaving ample time for early bathing, breakfast, and some fishing and sailing on the bay.

At the railroad wharf, a fishing smack was observed unlading a very large load of manure fish, to be taken by the freight train into the interior of the Island: their cost at the wharf $1 a 1000, or about $12 for an acre, to produce a fine crop of corn. Their cost of transportation to all points on the railroad, will be about the same as they cost the farmers within three or five miles of places where they are taken. Being immensely numerous, easily taken and used, they furnish an exhaustless amount of the best manure. When placed from six to ten inches deep in the soil, as they ever should be, no offensive smell is spread over the country, and the greatest benefit is derived from their decomposition. To the plains these fish could be made of immense value, as they make a manure highly adapted to their culture.

At half past eight A. M., the boat was taken for Sag Harbor, where an hour and a half was spent in visiting the town and vicinity. This is a town of far more beauty in its buildings and surrounding scenery of both water and land, than most of the company supposed.

The whaling business has added great importance to this town, to which sixty vessels engaged in this business, belong; fifteen of which, of large size, were in port. A long wharf stretches into the bay, to accommodate their business, from which a broad street, with fine large brick stores and dwellings on each side, proceeds in a curved direction, gradually rising to a considerable elevation for a mile, where various streets diverge from it; and the churches, one of which is an elegant structure, with a spire reaching over two hundred feet in height, five or six in number, are located in very pleasant situations. Rich and beautiful country seats are in the environs, with a pleasing variety of shade, fruit trees and luxuriant gardens. Seeing one tree of unknown name to us, we ascertained that it was the Maderia nut tree. Its leaves are something like our shagbark walnut. We were not aware that it would flourish in this climate.

Here, as elsewhere, the Chinese members of our party were objects of great curiosity, and were entertained to their very great satisfaction, in several calls at genteel residences, to which they were invited.

On the return, the captain politely took the outward passage, south side of Shelter Island, which is nine miles long, with variable breadth, to six miles, thus giving the company a distant view to Montauk Point, and in the circuit of the Island, a more extensive sight of Greenport Bay, village and adjacent country.

At 2 P. M., having dined at Greenport, the train started on the return, intending to reach Jamaica at 5 o'clock, to hold a convention appointed to meet there. Some delays were made, and the rain commencing, allowed time but for a short meeting, at which the following resolution was passed, offered by Dr. Peck:

Resolved, That we regard the Long Island Railroad as one of the vast improvements of our State, and of great importance, particularly to the welfare and prosperity of the Island, and as such, we commend the inhabitants thereof to give it their cordial support.

The meeting adjourned in haste, took the cars, and reached Brooklyn about 9 P. M.

Other resolutions were designed to be past, as embodying that full conviction of a most favorable result of the enquiries for which the excursion had been made, which had been most strongly gained by the whole delegation, but which could not be acted upon at Jamaica. We subjoin two.

Resolved, That, from all the information obtained from various sources, both practical and scientific, from the examinations made on this and the previous excursion of the New York Farmers' Club, and from the fruits of cultivation seen in various places along the railroad, it is the conviction and belief of this large and respectable convention, that these lands, so long left in a state of nature, are of immense value for tillage for the vine, the mulberry, orchard fruits, and garden and field productions, and fitted to reward the appropriate investment of money and labor in their good cultivation, to the full extent that can be reasonably desired.

Resolved, That the evidence furnished us this day, has convinced us of the capability of the Hempstead Plains of being brought under a high state of profitable cultivation, and that the ease with which they can be tilled, their fertility, their safety from drought or wet, and their advantages of climate, location and structure, make them in our opinion, at least worthy of the attention of such as desire to engage in agricultural pursuits, and this with or without investing a large capital.

These resolutions, with others, were drawn up after consultation, and doubtless express the views of most of the company. Their truth may be relied on with great confidence, and we trust that the public will have much occasion to remember this excursion with satisfaction.

If a fair degree of confidence in these views, shall be gained, and the railroad shall act with that liberality which their own interests and the public welfare shall dictate, it cannot be otherwise than that great good shall result from these excursions. To both the Island and the road, the inquiries must prove of great advantage. The construction of this road is just what the Island required for its highest prosperity, and it but needs this prosperity in a good degree, to ensure good dividends to the stockholders of this road. May these mutual interests produce the most friendly co-operation. We wish their perfection.

The following facts and incidents may well be appended to this report.

All the Hempstead Plains, over which the railroad passes, and in sight mostly, are the property of individuals, not of the town of Hempstead, and can be purchased at reasonable prices, particularly at Hempstead Branch, Hicksville, and at Farmingdale.

Two tracts were bought at Hicksville, last spring, immediately put under cultivation, and now have buckwheat growing with great promise of a good crop. Corn and potatoes are growing with much vigor on tracts recently put under culture, as promising as any famer wishes to see at this season. A tract of these Plains taken up a year or two since, produced twenty-five bushels of wheat to the acre.

Milk to the amount of 1500 quarts, leaves Hicksville daily, from cows pastured on those Plains.

A growth of herds grass was measured by a party of our train at Wampmissic, of 5 feet 8 inches in height.

The 140 bushels mentioned in the first part of this report as produced from an acre of a tract near Riverhead, that was reported barren when taken and put under cultivation, referred to ears of corn, equal to 70 bushels of shelled corn. Numerous facts like these were obtained from most undoubted sources. Silk is now produced in several places with good profit. Could a company be organized for silk growing, with a large capital, and suitable location selected, for which there are now great opportunities of choice on these lands, there is not a doubt that most successful profits would crown the enterprise. We know of some peculiar favorable facilities for such an investment.

The following gentlemen composed the delegation on this excursion:

New-York city.—Ogden Edwards, John L. Lawrence, James Renwick, F. A. Pentz, Adoniram Chandler, Dr. Manley, D. E. Tylee, Henry A. Field, B. Aycrigg, Dr. Van Hovenberg, Moses G. Leonard, John G. Mapes, Alanson Nash, Edward Ellsworth, John McCoy, David Logan, Edwin Williams, Ralph Hall, James M. Patterson, W. C. Hull, John F. Ropes, A. H. Guernsey, H. C. Westervelt, H. B. Chapman, R. T. Underhill, Henry C. Banks, James M. Classen, J. W. Smith, F. D. Clarke, A. C. Van Ebbs, W. C. Yarwood, Dr. A. Smith, A. B. Allen, James Alcock, Geo. H. Nelson, J. H. Stout, Robert Sealy, Philip Schuyler, Henry Meigs, T. B. Wakeman, W. A. F. Pentz, Barnabas Bates, John A. Sidell, Reuben Ellis, James De Peyster, John D. Williamson, J. W. Chambers, T. P. Shoals, Wm. Stebbins, Rev. Mr. Douglass, L. D. Dewey, Geo. Boyd, W. G. Hamilton, Samuel Griffing, Alex. Stewart, Maj. Meeks, W. E. Dean, Wilson Fuller, W. W. Lyon, Dr. Hyatt, W.

Chapman, Wm. Simmons, John D. Kellogg, Henry Baker, R. Venables, P. J. Browne, Edward Warner, John Cole, John Doyle, D. M. Parll, Curtis Holmes, A. H. Sidell, A. Topping, Thomas Spofford.

Westchester county.—Francis Barretto, Francis Salmon, Jordan L. Mott, Dr. Van Doren, Benjamin L. Benson.

Brooklyn.—Col. Spooner, Judge Hammond, James Walters, C. H. Thompson, W. A. Thompson, J. C. Watts, H. A. Hills, Samuel Maynard, Samuel Lounsbury, Stephen Crowell, Alfred Greanleaf, John G. Bergen, J. T. Bell, Richard Hale.

Williamsburg.—A. P. Cummings, Dr. Miller.

Astoria.—W. J. Townsend.

East New-York.—Wm. Simmons.

Jamaica.—Rev. Dr. Schoonmaker, J. J. Brenton, Rev. J. M. Mac Donald, Wm. Bailey, Gov. Edwards, M. I. Johnson, W. B. Hatch, J. A. Herriman, Geo. N. Codwise, A. Duryea, M. S. Huntting, Cornelius Duryea, Wm. Creed, Richard Brush, Dr. Peck, Gilbert Sayres, Gilbert Ryder, P. Potter, J. N. Carpenter, W. Coombs, W. H. Woolley, M. P. N. Rider, James Van Siclen, A. L. Searing, Laurens Reeve, C. S. Watrous, Isaac Hendrickson, Geo. W. Fox. Richard Rice.

Queens County Agricultural Society.—Albert G. Carll, *Corresponding Secretary*, Platt Willets, John Bedell, Geo. W. Hurbett, James Rider, William Jones, Laurens Reeves, D. F. Manice.

Hempstead.—David Willets, Charles Willets, John W. Smith.

Suffolk.—W. Sidney Smith, Wm. T. Weeks, Dr. Thomas Osborn, Geo. Miller, James H. Weeks, Benj. Strong, Chas. Vale, J. Wilcock Case, Wm. Jagger, jr.

Smithtown.—Joshua B. Smith, Wm. Churchill, Samuel A. Smith.

Islip.—William H. Ludlow.

Coram.—Richard W. Smith.

Hermitage.—Joseph H. Goldsmith.

Babylon.—T. P. Carll.

Yaphank—Nathl. Fuller, Alpheus Mills, W. S. Smith, jr.

September 7, 1847.

The Hon. Nathan Buchard, of the Assembly of this State, in the Chair.

HENRY MEIGS, *Secretary.*

Mr. Meigs read the following translation by him, relative to the science of Botany.

Annales de la Societe Royale D'Horticole, Paris, Jan. 1847.

XVIITH LECTURE OF MONS. POITEAU—COURSE OF HORTICULTURE.

Extracts translated by H. Meigs, Secretary of the Farmers' Club of the American Institute.

It is now a long time since able botanists have felt that the description, character and classification of plants, was rather a *sterile science*, and that in order to render it useful and truly interesting, we must *add the application of vegetables to the uses of man.* Linnæus was careful to note the uses of plants in domestic economy and the arts. It is now about one hundred years since he restored botany from the chaos in which his predecessors had involved it, and made of it a lovely, attractive, and seducing science, based upon rules easily understood. Now, with the exception of some immutable laws laid down by the immortal Jussieu, what passes to day for a truth, may to morrow pass for an error.

The study of botany is no longer a pleasure, an agreeable relaxation, but a painful task for those who wish to keep up with the current of innovations, true, false, serious, or futile, which are daily introduced into it, under the titles of perfection, &c. The masters of botany themselves cannot come to an understanding. For many years past, two of the most celebrated have maintained an obstinate combat in the bosom of the Academy of Sciences itself; and it seems very probable that this combat will never cease, until the death of one of the combatants.

Before the invention of the microscope, all botanists lived in peace; each one saw as well and as far as his neighbor; plants grew, yielded their fruit; crops ripened as well as they do in our day. The microscope came! behold, a war is lighted up! Yet the microscope is a precious little instrument; it has discovered many curious things useful to the advancement of human knowledge; it shows small bodies two thousand times larger than they are in reality, but still surrounded with fog, so that each observer very often sees differently

from another *vide dissidia*, hence the quarrel. I do not wish, gentlemen, to enter into this tourbillion, (vortex) we will not take any part in the struggle.

And I ought to premise that botany is not the science of names! as those who do not understand it often think it. It is so little a science of names that one may become a profound botanist without knowing the name of one single vegetable!

GRASSES.

From the numerous species of grasses, we have succeeded in cultivating thirty-seven. By culture these have been greatly improved from their native condition.

1. *Lucerne.* Much valued for soiling stock.

2. *Sainfoin.* Grows well on stony, dry soil, unfit for other plants. Gives a ton of hay on waste lands.

3. *Burnet.* Used chiefly for early sheep feed.

4. *Cichory.* Called Wild Succory; superior to any other grass on poor blowing, sandy, dry, soil.

5. *Spurry* Grows very late in the fall; suited also to dry, sandy soil.

6. *Bush Vetch.* Grows late in autumn, and is green all winter in England.

7. *Tares.* A sort of pea, sown early in the spring; another, the Winter Tare, sowed in September. The seeds are so much alike as hardly to be distinguished. Must be kept separate.

8. *Everlasting Tare.* Will grow twelve feet high; eagerly eaten by cattle.

9. *Tufted Tare.* Grows two to four feet high; good to restore weak or starved cattle.

10. *Strange Vetch.* Good for sheep.

11. *Clover.* Common red top.

12. *Clover.* Perennial or cow grass.

13. *Hop Clover.* Grows naturally in England in dry meadows and pastures.

14. *White Clover.*

15. *Timothy* or *Meadow Catstail*, or *Herdsgrass* or *Foxtail*; it has all these names.

16. *Meadow Foxtail.* Perennial.

17. *Meadow Fescue.* Hardy Perennial.

18. *Darnel*, or *Ray Grass.* Starts early. Horses very fond of it.

19. *Crested Dog's Tail.* Good for sheep; makes a thick turf; blossoms in June. Likes dry soils and not wet meadows.

20. *Meadow Grass.* Flourishes in driest soils; bears drought better than any other grass; makes fine hay, plenty of seed.

21. *Vernal or Spring Grass.* Very early pasture; not good for horses, but good for sheep.

22. *Sheep's Frescue.* Likes dry, sandy soil. Perennial.

23. *Hard Frescue.* Likes wet or dry soils; grows often to four feet high. It is best to mix it with some other grasses.

24. *Annual Meadow Grass.* Is in flower during the whole summer; all cattle like it. Makes superior butter.

25. *Fowl Meadow Grass.* Supposed to have been introduced by wild water fowls. Yields sometimes three tons an acre. Mowed from July to October. Good hay for horses and neat cattle.

26. *Flat Stalked Red Meadow Grass.* Likes dry soils; makes a fair turf; gives delicate flavor to mutton and venison.

27. *Silver Hair Grass.* Likes sandy soils. Good for mutton.

28. *Creeping Beni Grass.* Likes moist land.

29. *Tall Oat Grass.* Large, coarse; horses not fond of it; plenty of seed; next to Foxtail in the opinion of Mr. Curtis. Mr. Muhlenburgh, of Pennsylvania recommended it.

30. *Yellow Oat Grass.* Coarse; good sheep pasture.

31. *Rib Grass.* Not much recommended.

32. *Cock's Foot.* Coarse, luxuriant growth in all soils; not much recommended.

33. *Blue Dog's Tail Grass.* Useful in rocky situations, where there is little soil; will do for sheep.

34. *Flote Foxtail.* Grows in meadows; good in newly reclaimed morasses and lands recovered from the sea.

35. *Flote Fescue.* Grows in wettest soils; horses and cows are very fond of it.

36. *Water Hair Grass.* Grows on the edges of standing waters; gives good flavor to butter.

37. *Reed Meadow Grass.* One of the most useful of the British grasses. Grows six feet high sometimes; should be mowed, however, at four feet; grows in the marshes of Sandusky Bay, River Rasin, Detroit, and around the westerly shores of Lake Erie.

37. *Artificial Grasses*

H. MEIGS, *Secretary of the Farmers' Club.*

August 30, 1847.

Charles L. Fleischman read the following communication:

Gentlemen: You did me the honor to listen, at former meetings, to my remarks on the rise and progress of wool culture in Germany. Allow me now to say a few words on the subject of Agricultural Schools, a subject in which you take great interest, as you intend to establish such an institution in the vicinity of this city.

Having been myself a pupil of an agricultural institute; having practically applied on a large estate, for many years, the information which I acquired at that school, and having recently visited again the most renowned agricultural institutions of Europe, with the view to inform myself of their condition, I thought it would be well to state a few facts in regard to the agricultural schools of Germany, which I consider the best on the continent of Europe.

It is not necessary for me to dwell upon the importance which such an institution must have to a country like the United States—a country abounding in fertile lands and inexhaustible resources for all branches of agricultural and industrial pursuits.

The beneficial influence which such schools will have upon this country, has been ably discussed at your meetings. I merely state here, as proof of the correct views which have been taken by you on this subject, the benefit which Germany has derived from it.

Who is not acquainted with the history of the wars which enervated Germany—which exhausted all her pecuniary means, and brought it to the verge of utter ruin? Germany was after the close of the French war, in a pitiable condition; and had it not been for her industrious agricultural population—had it not been for her kind soil, which for thousands of years enabled her to stand the severe calamities which befel her during that long period, Germany would now be a second Greece.

Germany has no colonies, from whence she could draw revenues—no navy to invade distant countries, and extort means to enrich herself—and at that time it had no manufactories—no commerce.

England made her a depot of all its fabrics, and checked every attempt at home manufacture. England took in return, to speak in the language of the lamented Liste, the indefatigable advocate of the protective system, during a long period, for the millions of imported fabrics, sometimes in a whole year, as much agricultural produce as was necessary to supply England's population with one single breakfast. Germany had to seek its future prosperity in Agriculture.

Germany's monarch, aware that the prosperity of nations lies in the arts of peace, and not of war, commenced at first with a regular system of education, adopted measures which tended to improve her agriculture; she cultivated science, literature, and the fine arts—drew round her a system of protection for her industry, to exclude England especially from her markets; she encouraged internal improvements, and placed herself again in rank among the first nations of the world, based it upon a solid prosperity, arising from its *soil*, from its *industry* and *intelligence*.

Germany adopted, at an early period, various means to improve agriculture. Professorships of agriculture were instituted at the Universities—periodicals and journals were published to disseminate modern improvements—fairs and meetings were regularly held to encourage the farmer, but all that gave not the desired results. A thorough education was found necessary—a practical and scientific education, which enables the farmer to enhance the value of his landed property, as far as circumstances of condition and situation allow it—to give him the knowledge to improve and change the various modes of culture, and to be more than a mere imitator.

Proper agricultural schools were wanted, and the Monarchs of Germany spared no means to accomplish this important object.

The ablest men were selected for the institutions—nothing was spared to induce them to take charge of it.

The late King of Prussia, who like his ancestors, paid great attention to all improvement in husbandry, was the first who established such an institution. He invited Thaer, the celebrated German agriculturist, to settle within his Kingdom, and introduce agricultural schools.

The King of Prussia was exceedingly anxious to have Thaers's service, in order to carry out his views, and granted him the following advantages:

1. Nomination as a member of the Academy of Sciences.

2. A grant of 400 acres of land.

3. The privilege of selling the land—and granted him all the privileges attached to a landed estate belonging to a nobleman, in case he should buy another estate.

4. Protection to his Academy.

5. Entire liberty of the press in regard to his agricultural Journal.

6. Permission to practice his profession as a Physician.

7. His nomination as privy counsellor.

Thaer accepted the King's offer and left Cella for Berlin—sold the 400 acres of land granted to him, and bought, in 1804, the present landed estate Moeglin, where his son conducted still the school established by his father.

The other Monarchs of Germany followed the example of the King of Prussia, and Germany has now sixty-two large institutions. With some of them forest and veterinary schools are connected.

Austria has 9; Prussia 12; Saxony 5; Bavaria 16; Hanover 3; Wurtemburg 3; and the other States 14—making together the above mentioned number of 62.

Those of Hohenheim, in Wurtemburg; of Schleissheim, in Bavaria; of Thorandt, in Saxony; of Giesberg, in Nassau; and of Moeglin, in Prussia are the most celebrated.

They had at their head a Thaer, a Schwerz, and a Shoenleitner, men celebrated for their writings and labors in this important field of human occupation.

Their schools are well organized and well conducted. The experience of forty and more years has brought them to a perfection which may serve as a pattern to any country.

These schools I recommend to your notice. I brought with me from Europe the plans and programmes of the best schools; and it will give me great pleasure to lay them before you at any time you desire.

That these few schools are not sufficient to educate every farmer's son in Germany is obvious; and few, comparitively, to the whole number of those engaged in agriculture, enjoyed a regular education — but the few who had the opportunities, spread the truths of agricultural sciences over the whole country, by demonstrating practically what they had learned at the school. Most of these pupils have again educated young men, who again disseminate correct knowledge in distant parts, and gradually the importance of these schools becomes known to every farmer of that country.

The influence of these schools, and the various measures to improve the condition of that country, are perceptible in every part of it.

Its fields, which have supplied that nation for many a century with abundance, continue to yield rich crops. The fallow system has been generally abandoned, and luxuriant fodder crops cover the once naked fallow fields. Where circumstances permitted it, rotation of crops has been introduced; the breed of horned cattle and horses improved and the merino flocks bear wool which cannot be surpassed by any in the world.

The Zoll Union protects its home industry, and since, thousands of manufactories have been set in operation, which work up the raw material of its country into beautiful fabrics, which supply the wants of its population, and furnish even distant markets with a cheap and excellent article.

Railroads cross that country in all directions, and swift steamboats plough the waters of its beautiful rivers, and bring down from the distant mountain region the produce of the soil, the treasures of the

earth, and the productions of its industrious and skillful population to the busy commercial cities.

Science is cultivated with success. Its chemists devote themselves to lift the veil of nature's secret operations, and show the agriculturist how to enrich the soil.

The fine arts embellish the huge walls of its magnificent churches and palaces.

Magnificent monuments adorn the shores of its rivers, and give testimony of the high degree of taste in architecture.

Taste, the offspring of education shows itself every where.

The system of education is with every day more perfected. Every village has its school, where the children of the farmer are made acquainted with facts in agriculture and horticulture.

And all that must be ascribed to Germany's improved agriculture, the true basis of a nation's welfare.

The agricultural schools of Germany are carried on on large scales. The experimental farms are very extensive, and various technological branches connected with them.

For instance, the school Schleissheim, in Bavaria, where I spent several years, is one of the largest in Europe.

In the year 1822, that school was commenced—has become since the central school of that Kingdom, which has now 16, as I stated already.

Schleissheim is about seven miles from Munich, the Capital of Bavaria. That extensive estate belongs to the Crown, and affords all the necessary requisites for a school.

To Schleissheim belong 7000 acres of land, of which

1200 acres are fields;
700 acres meadows;
2000 acres low, wet prairies;
2600 acres woodland and clue;
Rest of about 600 acres pasture land.

The soil is sandy—about eight inches deep. The sub-soil calcareous gravel

The climate is cold and changeable, arising from the altitude of the place 1471 Parisian feet above the level of the sea; and from the neighboring mountains and extensive marshy lands surrounding the farm.

Not far from Schleissheim are two other royal farms of 1000 acres, with a different soil, and a more favorable climate: one with a rich but stiff clay, and the other with a sandy clay soil—which affords the pupils the opportunity to see the mode of working and cultivating various soils.

The buildings upon all these estates are very extensive and well constructed, for their object; especially those of Schleissheim, which are vast and commodious, but solid and all fire proof consisting of.

A Stable for 112 cows;
One for 60 horses;
Another for 70 oxen;
And airy, large buildings, for 3000 head of sheep.

Besides these buildings, there are large barns, granaries, flour and saw mills, straw-cutters, and thrashing machines, worked by water power, an extensive brewery, a distillery, a tar-oven, brick and lime-kilns, large bee house. There is a vegetable garden, an orchard, and extensive nurseries for fruit and mulberry trees.

The forests furnish means to study the culture of forest; the best mode of burning coal; on the prairies, the various modes of digging and preparing turf are shown.

The buildings of the school are like the rest, vast, and suitable for the purpose. They contain many comfortable rooms, for the professors and pupils, large lecture and recitation rooms, dining halls, a fine chemical and technical laboratory, a library, rooms for a collection of models for a zoological cabinet, another for minerals, and the various soils and sub-soils of that Kingdom—besides the land, which is divided into 20 fields.

There is a large experimental field, upon which every mode of culture, plants, manure, &c. &c., are tried.

The school and estate are under the superintendence of Professor and Director Veit. Besides him, are several professors employed to lecture upon various subjects.

There is a professor for Agriculture;

A professor of Natural History and Veterinary;

A professor of Mathematics, who gives lessons in leveling, surveying, topographical, architectural and machine drawing;

A professor of Natural Philosophy;

A professor of Chemistry and Agricultural Technology;

An Inspector for the establishment, who takes care that the disciplines and regulations are attended to.

The office of the royal estate serves the pupils to practice book-keeping, and the book-keeper gives regular lessons in the various modes of that branch.

The pupils are divided into three classes;

The first class is intended for the education of overseers, sheperds, and all such subordinate assistants for farmers.

Their instruction is practical, with the necessary theoretical explanations.

They exercise reading, writing, and arithmetic. They practice compositions, making out reports, certificates, and learn book-keeping.

They enter for one year, and pay $24,00 for board and tuition.

The pupils of the second class are expected to have received a more perfect education, preparatory to their entrance.

They study the various sciences, as far as they relate to agriculture.

1. Arithmetic.
2. Geometry and Stereometry.
3. Natural Philosophy.
4. Chemistry.
5. Anatomy and Physiology.
6. Zoology.
7. Botany.
8. Mineralogy.
9. They attend the various lectures on agriculture, and practice the various manipulations until they execute them with some skill.
10. Veterinary is taught, theoretically, as well as practically.
11. Agricultural Technology.
12. Drawing.

They enter for a term of two years, and pay for board and tuition, $60.00 per year.

The pupils of the third class are admitted at the office to practice book-keeping, and are charged with the management and superintendence of the various branches of the estate.

They pay the same as the pupils of the second class.

Religious instruction is given every Saturday evening, and all attend their church on the Sabbath.

So much has that nation done for the mainspring of its prosperity, and I hope that you, gentlemen, will succeed in establishing a perfect agricultural school; that you will find encouragement and assistance from the farmers and Legislature of this great State to carry out your plans.

It will be the first agricultural school in this country, round which will gradually spring up others. And I trust in the superior intelligence and activity of the farmers of these United States, to imitate your praiseworthy undertaking, and will establish in every State, and by degrees in every county, institutions of that description, wherein their sons will become impressed with the beauty of the study of agriculture, and its importance to the welfare of nations, and especially to this Republic, where the farmers are the main pillar of that lofty and glorious temple of liberty.

Mr. Wakeman rose to express his warm acknowledgments of the high interest and value of Mr. Fleischman's very excellent communication, which, he said, would be carefully laid before the public without delay.

Letter read from C. S. Guilliard of Rondout, Ulster County.

Rondout, Aug. 10, 1847.

Henry Meigs, Esq. Secretary of the Farmers' Club.

Dear Sir—Seeing by the accounts of the late excursion of the American Institute over part of Long Island, that much attention is just now paid to that important portion of the State; and supposing that in the meetings and conversations of so many competent men, brought together on the occasions, many suggestions have been made for improving the natural soil of the island; permit me to trouble you with the following inquiries, to wit:

1st. Has the use of lime been recommended?

2d. If so, in what state should it be applied?

And this brings me to a question I have often thought of putting before the Farmers' Club, if it has not already been a subject of discussion among its members, namely:

"Would not coarsely pulverized raw carbonate of lime, mixed up with a soil deprived of the lime principle, be a more permanent way of improving such soil, than the same stone used in the ordinary way, after burning and slacking with water, as it is most generally done now?"

This is a very old question. If we open the books we find many valuable papers written on the subject, which leads to the belief that, in many cases, raw limestone ought to be preferred; and it is remarkable that most all the accounts given, of direct and judiciously conducted experiments, (some of them of many years continuance, both in England and this country) agree in the conclusion that carbonaceous matters thus applied in a raw state, have proved very beneficial upon barren silicious soils, which afterward, by judicious management, were rendered capable of bearing crops of cereals with advantage. But it is also remarkable that most of the same accounts came to the same following conclusion, that "the expense of reducing limestone to powder, would probably prohibit its extensive use in that state." Now, this objection might be well founded "long time ago," but now, machinists have made such astonishing progress with their ingenious inventions, that it would indeed be doing injustice to them, to suppose that they cannot find means of crushing raw limestone into a coarse powder, for the same cost incurred now by the operations of kiln burning and water slacking, I, for one say that it can be done: so that, assuming this to be a fact, for the sake of the argument, the simple question remaining is, would it be more judicious to apply raw limestone pulverized, than the same stone burnt and slacked on the poor soils of Long Island?"

If it is true that the burnt lime, (that is to say, limestone deprived of its carbonic acid,) does not benefit the soil, until it has reabsorbed from the atmosphere the greater part of the carbonic acid which it has lost by burning, and has thus returned to the state of a carbonate again, then indeed, it would appear that these operations of burning and slacking, were mere contrivances to reduce the stone into pow-

der, and that the raw stone reduced to powder ought to claim the preference, as affording at once a large proportion of carbon.

It may be objected that the raw stone would undergo a slower disintegration, and decomposition, and not act so immediately as a manure: but if long duration and even permanency in the improvement of the soil, are the objects in view, a slow disintegration should not be an objection. There would always be a sufficient proportion of the crushed stone in minute particles, for immediate action.

But, sir, I do not wish to trouble you any longer with a discussion which can be carried on, and perhaps has already been so, by much more able men. My principal object in addressing you, is to draw attention, and make it known in proper quarters, that, in case the farmers and land owners of Long Island, should wish to give a fair and extensive trial to the raw pulverized limestone, I think it could be furnished to almost any quantity, and of various qualities, (some of it is almost pure carbonate of lime,) from this place and vicinity, and at prices which could not be objectionable, considering the object to be obtained.

I am very respectfully, sir, your obd't servant,
C. S. GUILLIARD.

Mr. Kentish spoke of the tried good effect of the prepared guano of S. F. Halsey, of Vesey street, on vegetation. Circulars to that purpose were distributed. It is asserted that this prepared guano contains chemical absorbents of ammonia, which part with it slowly as vegetables require it, thus rendering guano a far more lasting fertilizer of the soil.

Mr. Chambers presented potatoes from Mr. Kent, of Prospect Hill, Brooklyn, raised from small ones given by Mr. J. D. Williamson, last spring. These potatoes together were deemed to weigh about ten pounds, and are the product of one stem growing from one eye of a potato not more than an inch in diameter, which were brought from Columbia by Mr. Williamson last spring. Some of these potatoes of Mr. Kent were nearly ten inches in circumference: they are not yet ripe, and the Club will at its next meeting have some of the same crop cooked, that they may test the quality.

Ambrose Stevens spoke of the utter ignorance under which men suffer of the cause of the potato malady. In his examination of the numerous reports on this subject, he had met with nothing but the

most opposed theories and facts, so that we are left entirely without certain knowledge. The idea that we might find good healthy seed in the land of its origin, South America, had been tried in practice, and those original potatoes had been found rather more subject to the malady than others.

Chairman. The subject for the day is, "does cutting off and carrying away trees impoverish land?"

Mr. De Peyster thought that our experience in "the removal of forests, was that the land suffered nothing by it." Such were his first impressions on hearing this question put, and he believed that the answer should be in the negative.

Mr. Wakeman. From the short time which I have had to consider this point, I am in the affirmative. The continued taking off that timber which by its annual deposit of leaves, and ultimately of its branches and body upon the earth enriches it, must, as it seems to me rationally, at last impoverish the soil.

Dr. Peck. Why will not the carrying off trees as much impoverish the soil, as carrying off wheat, corn, or other crops? In Germany it was found that taking away the leaves and small brush from forests, injured the growth of the forest trees, and the practice was then prohibited.

Mr. Samuel Fleet. But there is a fact, the succession of different kinds of forest trees, which merits consideration. We find that when one order of trees or plants has been destroyed on land, frequently a different kind appears, suggesting the thought that the peculiar nourishment afforded to soil by one kind, may have, if I may say so, been used up, while that which is suitable to another kind remains in the soil.

Dr. Underhill, of Croton Point. I do not feel ready to meet this question; it requires consideration. The continual fall of leaves we know enriches the soil, and while the forest remains, the soil must grow richer. All land exposed, naked of verdure, to the rays of the sun, suffers constant abstraction of its fertility, for the capillary attraction in the soil is upward, and must be capable of dissipating the fertile elements in the atmosphere. Scotland, where it was deprived of trees, became comparatively sterile, a remedy, a revolution, was found in the practice of producing a sod on its soil. This sod generated fertility: the soil became black under it.

Trees certainly give to the soil under them an annual dressing of leaves. I wish to have the question discussed by the Club, "whether manures do escape from our soil downward or not," and I now submit that question for discussion in the following form:

"Are the manures, as usually applied to be mixed in the soil, lost by descending into the earth below the reach of vegetation, or are those portions not taken up by vegetable growth, mostly lost in the atmosphere, ascending when dissolved in water through the earth by capillary attraction, under the influence of solar heat, or in other words; is it the natural tendency of manures to descend, or do they ascend from the position the farmer usually places them in the soil?"

Dr. Peck. I hope that this question will be taken into consideration by our most able men. It is my opinion at present, that there is no more certain and rapid method of destroying all fertility in land, than the cutting and carrying off its trees.

The question proposed by Dr. Underhill, was then unanimously adopted for discussion.

Mr. Wakeman. On interesting subjects it frequently happens that some of our best men are absent. I see our friend Dr. J. Brown is here, but probably he wishes to reflect upon it before he speaks.

Mr. Meigs. The very object of this Club is to set men a thinking. By many this subject is deemed somewhat novel, let us take time to consider it.

Col. Sanders, of Kentucky. We know that by cutting off timber and burning it on the land, we hurt the soil. Girdling the forest trees, and thus permitting them to decay, is considered the best plan. In four years after such lands yield us good crops, but not so when the timber is cut off green. As to the grass enumerated to day, I have found but four of any distinguished value. We find the Orchard grass best. I have cultivated that much. Timothy is too heating and binding for stock.

Mr. Meigs. The thirty-seven artificial grasses enumerated, are adapted to a great variety of soil and situation.

Col. Sanders exhibited to the Club a beautiful brass model of "Anderson's Hemp and Flax Brake," the object of which is breaking the stems of those plants horizontally, so as to avoid rupture of the fibre, which produces by the old model so large an amount of

tow, being in the flax about fifty per cent., and in hemp about thirty per cent., whereas by Anderson's brake it is little if any. Col. Sanders stated that the hemp and flax stalks were steeped in an iron liquor, an antiseptic, for a day, in which time, after drying, they are ready for the brake.

Mr. Wakeman. We have some valuable papers on hemp, which I move to have referred to the Club at its next meeting. Carried.

Mr. Meigs read the following remarks by Thomas Jefferson on farming:

Mr. Jefferson once said that "God has made the breasts of those who labor in the earth, his peculiar deposite for substantial virtue; the focus in which he keeps alike the sacred fire which might otherwise escape from the face of the earth. That, corruption in the mass of cultivators, is a phenomenon of which no age or nation has furnished an example; it is the mark set on those, who not looking up to Heaven, to their own soil and industry, as does the husbandman, depend for it on the casualities and caprices of customers, and that the proportion which the aggregate of other classes of citizens bears, in any State, to that of the husbandman, is the proportion of its unsound to its unhealthy parts."

J. D. Williamson gave his method of raising melons.

Raise hills two feet high and six feet in circumference, then place a barrel on the top of the hill and fill it with rotten manure, and then plant your melon seed on the outside of the barrel all around it, and every morning pour one pail of water in the barrel. When the plants reach eight feet in length down the bottom of the hill, cover the ends over with soil, by which means you will get melons weighing forty pounds, three weeks earlier than the common way.

Melons raised this way, this season brought $40 the hundred, when others raised on the old plan brought only $10 to $15 per hundred.

September 21st, 1847.

Col. Lewis Saunders of Kentucky, in the Chair.

H. Meigs read the following translation, made by him.

HISTORY OF THE POTATO AND ITS DISEASE.

By Bonjean of the Duchy of Savoy, published in Paris, Lyons, Geneva and Turin. 1846.

Extracts, translated by Henry Meigs, Secretary of the Farmers' Club, from the volume presented by the Minister of Agriculture and Commerce, by the hands of M. Alexander Vattemare, Sept. 13, 1847.

"Notwithstanding the general use of the potato for many years past, little was known of the precise origin of it. This ignorance is somewhat removed by the studies of a learned naturalist of Paris, *Monrt. Virey.* The potato came originally from the intertropical parts of the American Continent. It grows spontaneously from Carolina to Valparaiso in Chili, where it is generally known by the name of *Papas*. It grows abundantly on the Andes, at a height of ten thousand feet above the level of the sea, and in the vicinity of Lima, in Peru, where it is generally known by the name of *Papas*. There the celebrated Joseph Pavon, one of the authors of the Peruvian Flora, found it wild or spontaneous. The Indians cultivate it abundantly in Chili and Peru, for their subsistence. It is also met with in the Forests of Santa Fe de Bogota. It was brought from Peru to the province of Betanzos, in Galicia, Spain, about the year 1530, where it became indigenous under the name of *Castana Marina*, (sea coast chestnut) and it produced very small tubers, some of a mild taste, and others *very bitter*—the former round or long and white, the others long and red. Specimens of the wild potato were sent to France in 1825, and were found to grow very slowly; the long ones having an eye very distinct, with a mark like that of the finger nail impressed in wax, the round ones having an eye equally distinct without the mark.

One of the first authors who has spoken of the potato was a Spaniard, who was a soldier in the armies which conquered Peru, Pierre Cieca, who thus describes the potato. 'In the neighborhood of Quito the inhabitants cultivate, besides corn, (maize) a sort of plant which is their principal food, which they call *Papas*. These roots are much like *Truffles*, but having no bark or any particular covering. They eat these as we do chestnuts, roasted. They also dry them in the sun to preserve them, under the name of *Chumo*.' Somewhat later Zarate, and afterwards Lopez de Gomara, a Spanish

Priest, in his General History of the Indies, published in 1553, also mentions the *Papas*, a name generally used then to designate the potato. Cardan who collected all the notions extant in his day, relative to the New World, was in 1557 acquainted with these *Papas*, which he says afford a substantial nourishment called *Eijuno*, a sort of Truffle which grows in a region of Peru called Callao; that persons who trade in this root in Potosi, get rich by it Cardan says it resembles the *Argemone*, a kind of poppy, to which Cieca, an ignorant soldier, had badly compared it." Joseph Acosta says that the Peruvians employed it in lieu of bread roots dried in the sun, which they called *Chunno*; or they eat them fresh or they broil them.

The following fact has singularly contributed to create a belief that the introduction of the potato was due to the English, and that it came from their ancient possessions in America. We find indeed, in almost all the works on rural economy and botany, published at the commencement of this century, that the potato was brought from Virginia to England, about the end of the 16th century, by Admiral Sir Walter Raleigh, who presented it to Queen Elizabeth; and that from Ireland, where it was first attempted to be cultivated, it was carried to Lancashire, and afterwards extended through the rest of Europe. It is true that Sir Walter Raleigh had visited Virginia in 1584, but according to all the historians cited by Miller in his Gardener's Dictionary, potatoes were not introduced until 1623, or according to Parkinson, until 1629. Every thing seems then to prove that North America first furnished this precious tuber; but it is demonstrated that if the English had brought it among them, it had before that time been very extensively diffused through the South of Europe. Being introduced into Spain after the conquest of Peru, it was almost immediately transferred to Italy. And it is natural that the Spanish soldiers who returned from America should be employed in the armies of Italy at that period, and that they should carry the potato with them.

The Botanist, Charles L'Ecluses, (Clusius) of Arras, who published in 1631, a very exact description of this root, and who called the attention of cultivators to it, as being destined one day to afford a grand resource for mankind, says that it has already become so common in some countries of Italy, that it was eaten habitually with mutton, and that hogs were fattened with it. He says the greater part of the Italians do not know where it came from, but it is certain that it came by the Spaniards from America. He doubts whether it was known by the ancients; thinks it may have been the *Arachidna* of

Theophrastus. Cortusus, another Botanist, supposed that it was the *Pycnocomon* of Dioscorides. Finally, it was not until 1590 that *Gaspard Bauhin* received from *Scholtz* a colored drawing and recognized it to be a *Solanum* He decided on introducing it into cultivation in some parts of Germany, Switzerland, Suabia in the vicinity of Lyons, in the mountains of the Vosges, &c. *Mathioli* afterwards described it in his commentaries upon Dioscorides.

It was then in Italy that potatoes were first cultivated, and from thence were spread over Europe, about the year 1550. The Italians called them *Tartuffoli*, or *ground Trufflels*. From this the Germans derived their name of the potatoe, *Tartufflen*.

About the end of the 16th century, potatoes began to be cultivated in the Low Countries, in *Franche Compte*, and in Burgundy, while their culture was later almost every where except in Ireland, which obtained there (as Spanish Historians say,) from the coast of Gallicia.

If we are to believe the English author, Holt, Captain Hawkins, who came from Santa Fe in 1565, carried to Ireland potatoes from that region. Some writers say it was from Virginia, where the potato grew in low wet soil, and that the native Indians of Virginia called them *Openauk*.

During one whole century the potato was disdained in Europe, and repelled by all imaginable means. It was rejected by the greater part of France. Prejudices which we cannot account for, a long time prevented a just appreciation of its value. It was called a dangerous food, at least a gross food, fit only for beasts, and it was accused of containing the active poisons of the whole family of the Solanum. About the year 1713, some French farmers undertook to raise it on a large scale, but they found it unprofitable. Fifty years afterwards it was seen on certain tables where it was confounded with the sweet potato of the West Indies, and with the *Topinambom* of Brazil. The peasants of the Appenines had long eaten potatoes with their pork and mutton, while the rest of Europe used them to fatten their stock of animals. Such was the condition of the potato when *Parmentier* began a series of theoretical and practical researches in order to induce the cultivation of potatoes. By chemical examination, he demonstrated that man would find a delicate food in the starch contained in it. He established by experiments, that it did not impoverish the soil, as was supposed. He said it was a sure preservative from

those frightful famines which periodically ravage every country, France in particular.

In 1783 the potato was first distinguished in the culture of the North of France, and in some of the departments near the Rhine. Parmentier put himself at the head of this movement, which he had been solicitous for since 1773. He braved all prejudice. He combatted step by step, the obstinate sophisms of men. He despised all the obstacles which folly and calumny would oppose to him any and every where. He played some childish tricks to excite the curiosity of the people. He made large plantations of potatoes in the plains of Sablons and Grenelle. He had numerous soldiers to guard these fields by day. Some of these soldiers at night, being off duty, stole some of his potatoes, each one being eager to possess some of them and to cultivate them secretly. Parmentier obtained from about 80 acres, which had never before been cultivated, and to which he applied no manure, some thousands of bags of these precious tubers, almost as substantial as bread made of the purest wheat. His noble efforts, nobly encouraged by *Louis* 16th, who kindly accepted from him a bouquet consisting of the flowers of the potato, were sufficient to convince the world of the advantages of its cultivation. Subsequently, Francois de Nuefchatean, minister of the Interior, in 1797, proposed to substitute for the name of *Solanum*, that of *Parmentier!*

Mon. Varey says: If the sanguinary wars of the French revolution had occurred some ages sooner, Europe would have been decimated by famine for want of the potato.

Charles Henry Hall. The French author has not given us facts, so far as I know. Columbus sailed in 1492. He landed in Cuba, and deputed some of his crew to visit an Indian Chief in the interior of the Island. They were received in a friendly manner. The Indians gave them tobacco, spun cotton yarn, potatoes and Indian corn. He returned to Lisbon. Washington Irving has seen the original letters there, relating to this subject, and so have I. Columbus presented these vegetables to the king; they were first planted in Spain.

Dr. Field exhibits from his farm specimens of Indian corn stalks, with the ears attached. One was the Browne corn, of which he obtained a barrel last spring. He planted it in a drought, the soil dry as ashes. He also planted the other corn, (premium corn.) The Browne corn is perfectly ripe while the other is in the milk. The Browne corn stalk is about half the height of the other, and the

latter bears on each stalk one ear five feet high from the ground, while the Browne corn bears two and sometimes three ears, having large grains, on each stalk about eighteen inches from the ground, which manner of growth secures it greatly from being blown down by high winds. This corn is estimated to yield ninety-one bushels per acre. If this corn had been substituted for our ordinary corn, in the present crop of this state, it would have yielded us five millions more bushels than we shall have. And there is a peculiarity about it, which is that it thrives among trees, while other kinds almost fail. The probability is, that owing to the small size of the stalks of this corn, that it does not so much exhaust the soil as the large and tall stalks of other kinks of corn do.

Dr. Underhill. But do not the large stalks, when returned to the soil as manure, supply the want? Still, the advantage of having so much grain is unquestionable. I have for some years cultivated corn somewhat like this, where the stalks had two, and sometimes three ears each; it was a Canada corn, I raised it four or five years ago.

Dr. Field. I rather think that Dr. Underhill is under a mistake as to this. He has had what is called early Canada corn, which is not now ripe, while the Browne corn is perfectly ripe, its husks all dry. Mr. Browne took great pains in selecting his seed corn for many years, the best corn from the greatest number on a stalk, and those having the most grain with the smallest cobs. My brother in-law has pursued the same judicious and excellent method.

Judge Van Wyck. We have in Dutchess county two kinds of Canada corn: one white the other yellow, flint corns, they resemble in growth, (though not in color,) the Browne corn. Our Canada corn is now glazed and the husks dry.

Chairman. This corn would change its character in a few years, if grown in this latitude, or any other than its own.

Gentlemen the regular question, "do manures ascend or descend from the position in the soil where they are placed?" is in order.

On motion it was referred to the Convention of Farmers, &c., on the 11th of October next.

Judge Van Wyck presented grapes from a wild vine, which had been transplanted from a forest to a garden, for some years. The

berries are round, quite large, not yet ripe. They have continued to improve since their transplantation, both in size and in flavor.

Dr. Underhill. That grape grows over our whole continent. It was thought highly of before we obtained our cultivated grapes, but this would take fifty years to attain civilization.

I have in eight years culture, been enabled to deprive the Isabella grape of its original musk entirely.

Judge Van Wyck, on behalf of Alexander Walsh, of Lansingburgh, presented to the Club, for the Institute, a medal of the New York State Agricultural Society. The die was executed in England.

J. D. Williamson presented a seedling apple, raised by Mr. Porter, and requested an examination of its qualities and a name for it. Those who tasted it pronounced it excellent, and on motion the Club named it Porter's seedling. It is a large, deep claret red apple, some three or four inches in diameter.

George Andrews, on behalf of William H. Hendrickson, of Middletown, N. J., presented a basket of peaches from his farm. They proved a delightful present, being of the full size of Malacatoons, and of excellent quality. Mr. Hendrickson has sold about six thousand dollars worth of peaches off his farm this fall. Thanks of the Club to Mr. Hendrickson, unanimous.

Mr. Antonides, of Brooklyn, presented some fine bunches of grapes, from his vines. About some of which, questions arose whether they were Isabella. They were very good.

Charles Henry Hall presented Isabellas from his farm which were excellent.

Charles H. Hall presented excellent pink eye potatoes, from Mr. Thomas, of Harlem, who has raised them on the same ground for the last four years, and they have always proved excellent.

Messrs. Ault & Son, of Baltimore, presented several lots of their Early George cabbage seed, which were distributed among the members, and the thanks of the Club voted unanimously to the donors.

Mr. Meigs presented an analysis of the potato, as follows:

Monographie De La Pomme De Terre.

Bonjean, Paris, &c., 1846.

Translation by H. Meigs, Sept. 14th, 1847.

In summing up the analysis of the potato made by several chemists, we find that it contains the following principles·

1. Starch.
2. Peculiar animal matter.
3. Bitter aromatic resin.
4. Parenchyma, (fibrous matter).
5. Solanin.
6. Asparagine.
7. Colored albumen.
8. A sugar principle.
9. A gum do
10. Citrate of lime.
11. do of potash.
12. Phosphate of do
13. do of lime.
14. Free citric acid.
15. Silica.
16. Alumine
17. Magnesia.
18. Manganese.
19. Oxide of iron.
20. Iode.
21. Brome.
22. Water of vegetation.

H. Meigs presented the following:

THE HORSES OF FRANCE. BY LIEUT. GEN. COUNT GIRARDIN.

To the Minister of Agriculture and Commerce of France.

Paris, 1844.

Vol. presented by the Minister, by the hands of Mr. Alexander Vattemare, to the American Institute.

Translated by Henry Meigs, Secretary of the Farmers' Club, Sept. 13th, 1847.

France has about three millions of horses.

The annual renewal requires (at about ten per cent.) three hundred thousand horses. For this three hundred thousand mares are necessary, and six thousand stallions.

Agriculture uses	2,500,000	horses.
Wheeling uses	200,000	do
For common wheeling	150,000	do
For luxury do	75,000	do
War	240,000	do
When the armies are in the field.		

In peace the army requires seventy-five thousand horses.

At this time the State possesses twelve hundred and eighty-two royal stallions, and two hundred and ninety-four approved, making in all fifteen hundred and seventy-six.

We think it necessary that government should possess five thousand two hundred stallions.

We think it is our duty to obtain thorough bred or pure blood horses, as the only regenerators of our horses. That those of the Arab or of the pure English blood, should be selected carefully.

The following letter was then read from Mr. D. Stebbins, of Northampton, Mass.

The culture of silk seems destined to become an important branch of American industry, and like that of wool and cotton, combine the triple interests of agriculture, manufactures and commerce. America has the appropriate soil and climate. Our population have the requisite mechanical tact, industrial habits and native perseverance, to insure success in any laudable enterprise. Satisfactory experiments have been made in proof of the practicability of silk culture, to encourage its pursuit, and evince the deep interest which exists in its favor; not only to supply ourselves, but other nations, with an article, adapted to the necessities and uses of every portion of the civilized world.

The existence of the silk worm has been perpetuated from time immemorial.

History does not nominally describe its origin, however, it is implied by its preservation through the early ages of the world; from the collection of every creeping thing into Noah's Ark, of course must have had a previous existence. After the lapse of many years, attempts were made to show that silk had its origin in China, before the time

of Abraham. We would not rely upon the fabulous history of China, but refer to the bible for better authority being the oldest and most reliable history.

The late President Stiles, of Yale College, one of the best linguists of our country, the pioneer of silk culture in New England, kept a journal of his experiments, and, the introduction of it into America, and of its progress in other parts of the world; a precious document to perpetuate the history of silk, kept in the archives of Yale College, to which I have added a supplement to bring down the history to the present time.

President Stiles adduces the antiquity of silk from the LXX., from Genesis, Leviticus second Samuel, first Chronicles, Psalms, Proverbs, &c.

Lexicographers opine, that the Hebrew words Shesh and Meshi, and perhaps other Hebrew words, might have been rendered either silk, cotton, or fine linen.

The mulberry tree, which furnishes the only appropriate nourishment for growing silk, was early recognized in Palestine, the valley of Bacca, too, may have been so called from the abundance of mulberry trees.

But whether the mulberry tree and its uses originated in Palestine Egypt or Babylon, and thence transmitted into China, in consequence of wars, emigration or captivity of Jews, Egyptians or Babyloneans, or, whether the origin was in China, and then passed into Europe, is of use only as evidence of its great antiquity; there is, however, good foundation for the belief that the uses of silk in some way, was known before it was cultivated in China. Chinese chronology is too apocryphal to set aside more authentic records.

European governments have expended vast sums to establish the culture of silk in their respective territories; and the British Government, to promote the culture in Georgia, within the first six years expended about *thirty-three thousand dollars*. If one third of the exports of Italy consists of raw and manufactured silks, and if silks constitute one of the greatest sources of revenue in France, need we dispair of approximating similar results, let us profit by their example.

In all business pursuits there have been periods of interruption, and why should the culture of silk be exempt?

If has been said, that for reasons of State, the culture of the vine in Europe, was suspended for a period of *two hundred years*, and then, by the example of a few patriotic individuals, resuscitated. Crowds of both sexes and all ages, embarked in a business, where all could take a part; and why may not we hope for a similar result in silk culture, which has been suspended or interrupted by various causes, and want of suitable protection? Among the causes of interruption, the tree speculation is prominent, and stands foremost. Many persons rushed into the business, *professedly* for growing silk, while the true motive was only to traffic in trees. Those who speculated with borrowed capital, depended on the sale of trees to meet their responsibilities, to accomplish which they began to offer trees at reduced prices, underselling each other, until the people became convinced that the owners considered the trees of but little value; this state of things paralised the silk business, which was improperly identified with the tree speculation. But there is *hope* in prospect, there may have been other minor causes combined, like small streamlets rushing to the main current, contra to the hopes of the friends of silk culture deluged our fair country with apparent ruin of silk culture; a few stanch friends have stood at their posts, others are now coming forward to the rescue undismayed, and with determined resolution to cooperate with its friends and the American Institute, to sustain the silk cause, with such leaders the friends of silk culture may expect the best results. Since the last annual meeting of the Institute I have tried an experiment which answers my most sanguine expectation, rendering the slow process of picking mulberry foliage, wholly unnecessary.

By the improved mode of cultivating the mulberry, and collecting the *augmented* feed for the worms, united with the former appliances of open hurdles and *Gills cradles*, there will be a great saving of time and expense to the silk grower.

The culture of silk in America began at the South, and by recent information, there is encouragement to hope that it will resuscitate and again spread over the land, and confirm the belief of the American Institute and the whole community, "that with experience and proper application of skill and industry, fostered by wise protecting laws, silk culture cannot fail of becoming one of the great staples of American revenue.

I have taken the liberty of presenting you the foregoing imperfect sketch; not that I claim the honor of presenting any new facts, or important experiments in silk culture, unknown to others, but as a *memento* that my confidence in the ultimate success of the silk cause is unabated, firm, unwavering, and not forgotten by yours,

With due respects

D. STEBBINS

T. B. Wakeman. Esq. Sec. of the American Institute.

Nov. 2d, 1847.

Judge Van Wyck in the chair.

Mr. Meigs read the following translation, made by him from the Portugese; viz:

O Auxiliador da industria Nacional.

June, 1846, Rio de Janeiro, Brazil.

"*Vires industria firmat.*" Virgil.

We translate the following from this volume with great pleasure, not *because it is American*, but that we find in it a strong and original sense, for which we often look in vain across the Atlantic Ocean. The continents of North and South America have a great part to play in the history of the earth. Stretching from ice to ice—almost from the Arctic to the Antarctic Circles, they contain all climates, all forms and qualities of earth, and are destined to be the theatres of grand events.

The volume under consideration is presented to the American Institute by the Brazilian Consul, L. H. d' Aguiar, corresponding member of the Institute—and we discover in it that ascendant talent, which leads the way to the highest improvement in the useful sciences. We present the following, on Agricultural Chemistry:

"It is now some years, that Agricultural Chemistry has taught that there are essential ingredients in soils, which it is of the utmost importance that we should understand, and we are greatly indebted to Liebig for light on this question. It is now incontrovertible that the salts existing in soils, constitute but a very small fraction of the whole mass of soil—that they are not to be deemed accidental, but are entirely indispensable to plants, which according to their respective natures, admit one or another into their circulation—and perishing for want of the appropriate salt. By salts, we must understand all those substances which consist of a base united with an

acid. The principal bases are Soda, Potassa, Lime and Magnesia, which enter into the composition of all fertile soils. The acids with which these ordinarily combine are the Carbonic, the Sulphuric and Phosphoric. By burning plants, these combinations appear in the ashes. An examination of the properties of these principal salts, and of their components, sheds a great light upon this subject. Let us begin with the ashes. These are discovered to be metalic oxydes, the pure metals of which were obtained by Sir Humphrey Davy, and they are denominated respectively, Potassium, Sodium, Calcium and Magnesium, and from Barytes, Barium, &c., &c. But Potassium, which is the one most easily obtained, may be taken as a type of the class. It is a glittering metal, much like silver, but clear as water. It has some qualities in common with Sodium; when a current of water is passed over it, it is decomposed with great rapidity, devolving its oxygen. It often changes red color to blue. It combines with other acids, forming neutral salts, which are obtained by evaporation. The other alkaline metals follow the same process, but not so energetically as Potassium. The proportions in which they continue are 40 parts Potassium, and 8 of Oxygen, making 48 of Potassa; 24 parts of Sodium with 8 of Oxygen, making 32 of Soda.

Knowing the great importance it is to a farmer to know what amount his soil contains of Potassa or of Soda, we present them disdinctly. Take a portion of the soil and put it into boiling water, and then strain the whole through a filter. The water will extract all the soluble portions; then dry by evaporation, and the salt remaining will show by its form, its solubility, and the action of the air upon it when exposed, what base it contains. That base will generally be found combined with sulphuric acid. When Sulphate of Potassa is present, it will be discovered by its slow solution and its permanency when exposed to the air. Some plants receive from the soil minute portions of alkili, while others absorb an immense quantity. Some plants, mustard for example, contain a considerable quantity of sulphur, which combining with Oxygen, developes the offensive gas, Sulphuretted Hydrogen, as is found in fire-arms, sometimes neglected, and in putrified eggs. To this is owing the nauseous smell of water in which some vegetables have been cooked. So with the water near the mouths of rivers, especially on the coast of Africa. The copper of ships anchored there, rapidly decays, and this is the attributed cause of the unhealthiness of those shores. The best test of its presence is Sugar of Lead in solution, which in a short time shows it by producing Sulphuret of Lead. Sulphuretted Hydrogen is then un-

questionally pernicious to animal life, but not to vegetables, for to some of them Sulphur is necessary in their constituent parts. It is essential to mustard, cabbages, turneps, and a large class of cruciferous plants, &c., &c.

BERMUDA SQUASH.

Mr. William Graves, of Bedford, Long Island, presented a specimen of this very fine vegetable to the fair of the American Institute, and gave the following account of it:

Bermuda squash; planted the latter part of June; ready to pull the last of August.

The seed was preserved in wood ashes all winter; laid in the earth about two feet, covered over with a little hay and earth. When it was planted, in June, the wood ashes were put in the earth with a little poudrette mixed with it. In Bermuda, two hundred squashes have been raised from two seeds only. They increase the vine by taking off two or three joints and planting them afresh, that makes two vines extend over a lot one hundred feet by twenty-five.

Raised in 1847, at Bedford, Long Island, by William Graves.

Mr. Meigs said: At the late fair at Castle Garden, we had the pleasure to see a contrivance for expelling the moisture from grain or flour, without in the last degree altering the pure natural taste of the article. This is a machine heated by steam, which gives out all the required heat without the possibility of injury. It leaves the grain, meal or flour, in perfect purity, and when once packed in barrels or otherwise, it is almost impossible for them to receive any injury from without, so that they may be transported to any climate or any distance, without deterioration. And although this new process is of very great importance to the export of bread stuffs to foreign nations, sometimes immensely so, yet we hold it to be of still greater importance for the preservation of the staff of life from all must, moulder, or other injurious alteration of its native properties, for domestic use.

Heretofore the breadstuffs have been put up in a moist condition, and millions of barrels of them have suffered great loss by the pressure of the moisture in them. The truth is, that when put up dry they will last as long as the grains of wheat in the Catacombs of Egypt, whence we now have grain which vegetates again after the

lapse of two or three thousand years. The reason of this is so apparent, that it seems wonderful that we should not before this time have applied the principle. No alteration can take place in grain, meal or flour, that is perfectly dry.

Edward Williams, of Mount Pleasant, of Missouri County, Tennessee, states in a communication to the Club, that he has planted potatoes cut into small parts, with cotton seed for manure, and had a good crop. He thinks that the oily nature of the cotton seed produces a healthy and most active growth of the potato.

John J. Pettibone, of Manchester, Vermont, Sept. 20, 1847. The following letter from him to Mr. Wakeman, on the subject of wool was read.

Manchester, Vt. Sept. 20, 1847.

Sir: Your letter of the 9th inst., was duly received. My sheep at that time were not where I could comply with your request. H. Walker, Esq., has been well acquainted with my sheep for the last thirty years. And few men are better judges of sheep and wool than he. I believe he procured the most of Gov. Skinner's flock from Connecticut. In 1827 I purchased the whole of his flock of ewes. Yet I must say Mr. W. has too high opinion of my sheep. It is too much to claim one of the finest flocks in the United States of fine wooled sheep. My flock are pure Merino, no mixture of Saxony. A particular description of my flocks and mode of management, was published in the Dec. No. of the Albany Cultivator, in 1845. That article was extensively copied into the newspapers of all the wool growing States. I am more and more convinced that the course I have pursued, is the only method that can be pursued successfully to improve a flock.

It is not the finest nor the heaviest fleece sheep that is the most profitable; such a combination of weight, fineness, length, and thickness of staple, symmetry and size of body, (the expense of keeping always to be kept in view) as will annually produce the most profit, is the best sheep. The rapid increase of sheep, and the short time required for them to arrive at maturity, will enable a judicious wool grower to produce in ten years almost any kind of sheep he may desire. To do this, however, requires much in breeding. I have no doubt that the finest Saxony sheep may, by judicious crossing, be made heavy shearers of superb wool. The wool grower must not look for so desirable an object to be brought about by proxy; hired servants alone will never accomplish it. It is difficult at this season

of the year to procure samples of wool that will show the true character of the flock; I do not believe a more even flock of four hundred sheep can be produced than mine, either as to size, build or wool. Yet there is a difference in the length, thickness and quality, of different sheep in my flock. I sold fifty bucks last April, which went to Ohio, forty two of them lambs. I kept three for my own use, of the lambs. They were May lambs, now sixteen months old, they have not been shorn. I send you three samples taken from a two year old before shearing. One sample, No. 1 from side, No. 2, from the thigh; No. 3, from the hip, two inches above the gambril joint. This buck is well built, no wrinkles or dewlop, he weighs now one hundred and seventy-five pounds. The next samples are from the yearlings; their respective weights are 110, 121, 124; these have never had a particle of grain of any description; they are remarkably well built. I have this day sold one of these with nineteen buck lambs, to a gentleman from Michigan. No. 7 was taken from a buck's fleece after it was shorn, and close up. I know not from what part of the fleece it was taken; the weight of fleece about seven pounds; weight of body in March, seventy-eight pounds. No. 8 from an old ewe that died in good order in Februrary last, her fleece well washed has generally gone 5 pounds, and raised a lamb. No. 9, seven samples taken from different fleeces as they are packed in the wool room; these show the general complexion of my wool before and after washed. My flock for the last fifteen years have averaged over four pounds. I sold last year for forty cents per pound; three hundred and fifty fleece averaged four pounds two ounces. My present clip is unsold. Manufacturers who have had my wool say it will average about one fourth longer than lots in general. I have for the last two years kept my sheep in a close shed. I wintered one hundred and two lambs last winter. There was not one sickly sheep in the whole lot; they had nothing but hay; foddered twice a day; they had access at all times to good water and salt. I never salt hay. Two hundred lambs and yearling ewes and wethers, on a space of one hundred and six feet by fifteen, separated into three lots by the racks from which they eat their fodder. I never had sheep winter so well, only one died, and that in good order. I am satisfied the wool is softer, stronger, and greater in quantity, by keeping the sheep warm, and the savings of fodder and manure in this way, are important items in the profits of sheep. I fear I have trespassed too much upon your good nature.

Very respectfully, your obedient servant,

JOHN I. PETTIBONE.

T. B. WAKEMAN, Esq.

Daniel Rogers, of Hoosick, Rensselaer County, N. Y. Sept. 22d, 1847. A letter from him on wool, to T. B. Wakeman, was read, which will appear next week.

John Travers offered a premium of twenty five dollars to be given by the Farmers' Club for the best essay on the condition of the linen manufactures of the nation, what has caused them to languish, what is necessary to make this branch of industry prosper, and the best method of growing and curing hemp and flax.

A memoir on the history and growing of sheep, was received from an intelligent friend, and referred for examination to Charles L. Fleischman.

Mr. Wakeman offered the following resolutions, which were unanimously adopted:

Resolved, That the growing interest taken in agriculture, has induced farmers, gardeners, &c., to make more accurate observations and improvements than formerly, both in the field and in the garden, and with fruit of all kinds, particularly in the silk culture, which if brought to the knowledge of the public, would no doubt promote the public welfare.

Resolved, That individuals in all parts of the country be requested to communicate all such facts and information as have come to their knowledge, to the New York Farmers' Club of the American Institute, that they may be read, and selections made for publication.

Resolved, That the interchange of choice grafts (in the proper season) and seeds are eminently beneficial, and that our fellow citizens be invited to forward such as may come in their possession, and receive others that may be contributed, that the most valuable productions of all kinds may be easily and generally known and propogated. The last fair has shown that there are multitudes of valuable seedlings worthy of propagation, of very recent origin, which it would be a public benefit to have brought into general cultivation.

Ezra Ide of Shelby, Orleans County, N. Y., states in a letter to to Mr. Wakeman, that potatoes may be preserved from rot in the field, by hilling up every hill so as to carry off the rain rapidly. He found that in low hills, the rain in hot weather accumulated in the middle of the hills, and thus produced rot.

Mr Wakeman moved that the thanks of this Club be presented to the President and Directors of the Long Island Railroad, and to those of the Harlem Railroad, for their free offering of their roads to the Club for its excursion, ploughing and spading matches, during the past season.

This motion was unanimously carried.

Mr. Wakeman moved a vote of thanks to Col. John Travers, of Osecola Point, N. J., for his offer of a premium of twenly-five dollars for best essay on flax and hemp.

This motion was unanimously adopted.

Mr. Meigs moved a vote of thanks to Capt. De Peyster of Staten Island, for his present to the Club of a bushel of ears of splendid corn.

Unanimously adopted.

Mr. Haggerty mentioned the sending to our market, within a day or two past, of an ox (from his Long Island farm) weighing 1915 pounds.

The question whether manure ascends or descends, is continued over.

Adjourned to the 16th of November at noon.

H. MEIGS, *Secretary*.

November 16*th*, 1847.

Judge Livingston in the Chair.

Mr. Meigs read the following translation, made by him from the *O Auxiliador da Industria Nacional* of Rio de Janeiro, June, 1846.

ON THE SALUBRIOUS RESULTS OF TREES, ETC.

The Roman Legislators knew that trees were of high importance between Rome and the Pontine marshes, securing the city from the effects of the pestiferous effluvia, generated by heat; and these miasmas were formerly absorbed by the trees. To-day, for want of the trees, the air is infected, and dangerous to breathe during the hot months. Rome abandoned her agricultural institutions, and the consequence of this fatal error, was trouble, mendicity, and crime.

The most brief account we can give of the effects of wise agriculture, is of Tuscany. The Grand Duke Leopold, had the good fortune to have among his subjects, men of wisdom and virtue, who loved their country, as the celebrated Andreucei, Count Guasco, and others, and by confiding to them schools, and the organization of reforms in agriculture, institutions for that purpose, and for public education, under the counsel and care of learned men, were adopted by the Duke and carried into execution with activity, constancy, and firmness, and the consequence was, that in a few years Tuscany passed from a miserable condition, one revolting, and which had existed for a long time, to become a model of prosperity, and a country which the most distinguished observers consider as the diamond of Italy. And from that period we find it augmenting in population, and at this time we observe its abundant production of all the various fruits of the earth, trees, vegetables, convenient establishments of all sorts, public safety, an industrious, happy and steady people.

From the evidence before us of the high utility which Europe has derived from agricultural schools and writings, we think that we may confidently say that the preceding remarks will be advantageous to our country.

Chairman. The subject of the day is in order.

Dr. Underhill. I am prepared in some measure to give my idea of the fertilizing elements of manures when placed in the soil, and of the peculiar depths at which they should be placed, according to the various soils. We are not yet fully able to demonstrate all this, but let me premise by the remark, that probably, near one hundred millions of dollars worth of manures are annually applied to the soil of the United States; and that by putting them on or too near the surface, we lose one half by escape into the atmosphere in the course of our long hot summer. One important object, is then, to save as much as possible of this amount, by a judicious disposition of them. It may be safely stated that *one-third of all our expense in farming* is the manuring of our lands. The question under consideration is, Do the fertilizing elements of manure ascend or descend? Do they always rise? When the rain falls and dissolves them, they descend to a certain extent, but when the sun shines again they ascend. I have managed my farm on this theory, and I have placed my manures deep in the soil. The proper depth depends on the kind of soil; if we put manure on the surface of sandy land, like much of that of Long Island, it is soon lost under the strong solar heat. In such soils

on my farm I put it deep, and in a drought I find the effect excellent. I do not put it so deep in stiff clay soil, nor in a cold soil. When the manure is deep, the first growth of plants is slow, but soon appears the vigorous influence of the manure below. It has been observed a long time that there is a peculiar vigor in the vegetation in grave yards; and it has also been observed, that in such yards when old, no interments having been made in a long time, they become sterile. And it has been noticed that where sand has been carried upon rich valleys, that land soon becomes fertile, *the fertilizing elements ascend!* Place a thin covering of straw over poor land, and the places covered are found soon to become rich. The covering arrests the ascending elements of fertilization, and confines them to the surface of the soil. In North Carolina it was remarked that when the soil was covered by leaves of the pine tree, it was rapidly enriched. So a coat of clover arrests the flight of the fertile elements and enriches land. All that is fertilizing in manure is soluble or gaseous. What would be the thickness of soil in primitive forests, if fertility should never ascend? Yet we find it on the levels where it has never been washed away, but about *eighteen inches!* The elements do not ascend as rapidly in clay soils, as in porous, sandy land.

I covered a sandy field with a coat of clay, and found great benefit to the soil by it. For the purpose of putting our manures deep, it is necessary that we should plough deep. The justly celebrated Buel strongly recommended it. The salts, &c. in solution in the soil, ascend by capillary attraction to the surface. A fall of snow late in spring has been remarked to cause fertility; grasses especially show this power. I covered my orchard with clover, and it enriches the ground, and I find more vegetable mould there than there was before. Our clear sky and great solar heat, cause a great loss in the fertility of our soils. In a cool, moist climate, like that of England, the results, are not the same; a top dressing of manure is good in England, but almost worthless under our sun. Long Island farmers should put the manures deep in their porous, sandy soils. In what is called *a cool season here, we always raise the best vegetables.* Not only do the fertile elements rise, but caloric rises also. I have found ice half an inch on the ground in my orchard, and yet the apples on the trees entirely untouched by frost. This is due to the rising of caloric in the body and limbs of the tree during the night.

Mr. Meigs observed that Dr. Underhill's remark on the thickness of soil in primitive forests, recalled to his mind an observation made

by the amiable James Madison, in an agricultural society of which he became President, after leaving the chair of the Union. He said that it was a memorable circumstance, that in the most ancient forests, in level places all over the globe, soil is found to be but one foot deep, just the proper working depth for the spade and plough. That it would seem therefore, that this one foot of soil is a fixed laboratory, in which all the elements of vegetation are concocted, and that no more is required evidently, for vegetation. I speak from memory, but the remark of Mr. Madison was to me new, and I have not met with it any where else. Following this idea of Mr. Madison, let us consider how truly it corresponds with the peculiar depths at which seeds will vegetate. Experiment has shown that wheat will not germinate at nine inches depth, nor seed hardly at one foot. Seeds, then, must be within the limits of this superficial laboratory or remain dormant, as many are known to do at various depths, for ages.

Judge Van Wyck. Manures both ascend and descend. By which process is the loss greatest? That must depend on the nature of the soil. Loose porous land admits water, containing in solution the elements of manure, to descend readily to the bottom, and then find its way to the valleys through the strata. Rich earth absorbs the gases of manures and water too, for the uses of vegetation, and the richer the earth, the less of the manure goes down. One cubic inch of water will absorb four hundred and seventy-five cubic inches of some gases.

It is certain that long drought lessens the manure in our land, but it is not so certain that putting the manure deep will prevent this. Sir Humphrey Davy's experiment of drying soils perfectly, and then marking their power of attracting and absorbing moisture, proved that the richest soils attract and absorb the most. The elements which descend in porous, ascend in heavy, but rich soils retain them.

Dr. Underhill. I placed rich muck deep in my sandy soil, planted grape vines over it, and seven years afterwards, on examination, I could not find any signs of the muck, below where I put it, or any where else; it must have ascended.

Mr. Wakeman presented a letter from Professor Mapes, now in Newark, N. J., from which some extracts were made. It appears that the learned Professor has undertaken a series of the most valuable experiments on his farm in Newark. Parts of his farm require-

ing drainage, he has tried on a lot of seven acres, having a subsoil of clay pan. These drains are eighteen inches wide, and about four feet deep. He has made ten thousand running feet of these drains. The first twenty-four inches in depth of these drains, he has effected at a rapid rate and small expense by oxen, the remainder by the work of men. The bottom is covered with stones resting on side stones and all covered with cypress shavings made in the dressing of shingles. The durability of cypress in its native swamps, induces the Professor to think that their shavings in his wet drains will "abide their time." This field has a surface of superior loam thirteen inches thick, and under it ten inches of subsoil; a clay colored with oxide of iron, that won't leak one drop. This is underlaid by a decomposed freestone, mixed with just enough clay not to pass water. I have turned up the surface of this field fifteen inches, thus bringing up two inches of the clay, and I have subsoiled in the furrows seventeen inches more, making a depth of thirty-two inches, being two inches less than the average of ploughing of other parts of my farm. I have one thousand loads (half cords) of muck, dug, and a large quantity dug some years since, to drain meadows. I mean to try every experiment laid down in Dana's Muck Manual. Thanks to friends! I have shells for lime, pigeon and hen dung from curriers and morocco dressers, salt hay and peat ashes from soap boilers, and currier's offals, butcher's hog pen manures, the hogs being fed on blood and offals only, night soil from Newark scavengers, a boat load of charcoal dust, and any quantity of refuse salt hay, and a determination to get at the truth and nothing but the truth. I am in hopes to give the Farmers' Club some facts next year, worth their knowing.

I am feeding my working horses and oxen with hasty pudding mixed with cut corn stalks, swelled by hot water, (all of course before fed). After a few days they eat it well, and my oxen improve rapidly, even while working hard. I use one of Jordan L. Mott's sixty gallon kettles to cook the meal. For swelling the cut corn stalks, the hot water must contain some salt. Fresh water can only be heated to 212 degrees, but with salt added it is capable of receiving a much higher degree of heat. In a hogshead half full of cut corn stalks, put in three gallons of boiling water containing one quart of salt, cover the hogshead with a blanket, and let them swell and steam. When cold, take them as dry as they will drip, then mix them with hasty pudding, and any animal of good fair common sense will eat it.

Sometime since, I named to you that some farmers asserted that onions were never annoyed with insects, and that if an onion seed

were planted between four grains of corn, it is said to be serviceable in keeping off the grub and black corn worm. If you have promulgated this I am sorry, as I have since learned from undoubted authority, that a few years since all the onions in a neighborhood near me, were cut off by these very black corn worms.

We have many experienced milkmen here, and some of them assure me that after cows commence to fail materially in their yield of milk, that increasing the quantity of salt given to them, to two quarts per week, and dividing that into three messes, given with great regularity three times per week, will often restore the quantity of milk after it has lessened one third.

You notice that our Newark Franklin Institute which I have established, has several hundred members already, and all enthusiastic. Their large room at Military Hall, is crowded every Wednesday evening. Last Wednesday there were at least fifty persons who could not get seats.

Since the receipt of this communication, the Farmers' Club has received from Professor Mapes a turnip weighing eight pounds, twenty-eight inches in circumference, of which he says to Mr. Wakeman: " this turnip grew immediately over an under drain, and is a fair sample of others in that situation. The drains are twenty feet apart, and four feet deep. At ten feet distance from the drains the turnips are only four or five inches in diameter, and at twenty feet distance from the last drain the turnips are not worth pulling. The ploughing and manuring is the same in all parts, but not subsoiled. This a perfect example of the benefit to be derived from under draining or subsoiling. In another field where one of my neighbors used the subsoil plough, following the surface plough through every third furrow, the turnips over the subsoil furrow are nearly or quite double sized!

Dont publish these letters, you may read them to the Club."

The Professor says that he " cannot filter water through three feet of earth, and get away with it any of the constituents for plants, until the earth is charged with many times the quantity it is capable of applying to vegetation."

We obey the injunction of the learned Professor. We don't publish his letter. The above are only a few extracts which we dare not withhold from members of the club who were not present at the meeting.

Mr. Wakeman. I invite communications from all our intelligent friends, on matters pertaining to our farmers, in order that such of them as have information for the general good of our agricultural interest, may be incorporated in our Annual Report to the State Agricultural Society.

J. D. Williamson. The subject of the day is interesting to the farmers of Long Island, some of whom are already awakened to the truth of the doctrines now put forth. The general character of the soils of the Island renders this theory peculiarly valuable, being as is generally known, of a light porous, sandy constitution, and the usual practice of placing manure so near or on the surface, having been found very ineffectual, and the fertilizing influence of brief duration, many Long Island farmers place their manures much deeper.

Subjects for next meeting adopted:

Agricultural Schools, Liquid Manures, and the ascent or descent of Manures continued.

The Club then adjourned.

H. MEIGS, *Secretary.*

Dec. 7th, 1847.

Judge R. S. Livingston in the Chair.

Mr. Meigs read the following extracts, translated by him from the Manuel D'Agriculture, by Jules Martinelli, second edition.—Published in Bordeaux, in 1846.

Premising that this little duodecimo of 388 pages, is one of the volumes presented by Mr. Vattemare, to the Institute, and that it has the merit of containing a great amount of useful information, conveyed in a clear and intelligible way.

TRANSLATION.

"The Soil.—The Agriculturist, before he undertakes any serious operation on his farm, ought to know what the soil is, to the bottom, —and should study all the effects of cultivation on it at every season of the year. Men of full age, who are strangers to science, need not be alarmed by the scientific details, which they will find in this

chapter, for these will be very elementary and indispensible, and very useful to those young farmers whose instruction is a little advanced.

Formation of Arable soil.—Science has proved two distinct periods in the formation of the globe. In the first, those elements destined to form the solid mass of our globe, were in a state of fusion, and were combined during the cooling of the masses, constituting the crystaline rocks. These rocks are composed of silex, alumine, lime, magnesia, potash, soda and oxide of iron, in various proportions.

After being cooled, the rocks of igneous origin began to suffer the process of disaggregation, by the influence of the water and atmospheric action. The small particles (debris) resulting from this process were deposited by the waters in horizontal beds, and afterwards consolidated. This was the second period of the globe's formation—the Diluvian Period. We find in these rocks of sedimentary origin, the same elements, as in those of the igneous formation, but the organic (debris) particles, which are found in them in great abundance, indicate that living plants and beings already were existing at the period of their formation. The causes which disaggregated (crumbled) the primitive rocks, also continued to act on the sedimentary rocks ; and the final result of their decomposition, was the formation of the earths which cover them, the chemical composition of which partakes necessarily of the nature of the rocks from which they were derived. The earth thus formed has nourished the vegetables and the animals which constantly perishing and renewing, leave in the bosom of the soils, *their remains.* That is to say *organic matter.*

Vegetable earth, there is composed of inorganic (debris) particles from the decomposition of rocks and of organic (debris) particles from that of animals and plants.

A few words now on the constituent principles of soil. We have spoken above, of the chemical composition of the minerals which compose the primitive rocks. The *three first* elements, Silica, Alumine, and Lime, seldom form less than 93 *per cent.* of the mass of soil, and therefore constitute the bases of all cultivatable soils.—Magnesia, Potash, Soda and Oxide of Iron, play only a secondary part. We shall content ourselves with mentioning as constituents of soil, also Manganese, Sulphur, Phosphorus and Chlorine.

Silica, is of all the elementary earths, most extended through nature, where it is never found in absolute purity, but always mixed with other minerals. Among those bodies into whose composition it enters for the largest part, and which exhibit Silica in its highest degree, we mention the following : All precious stones except the diamond, the flint, quartz and sand. It has no affinity with water, and is considered to be insoluble in it. Yet its presence in plants would make us suppose that its insolubility is not so absolute as is commonly supposed.

Alumine is the principal base of clay, which it forms by combining with the silex. Like silex, we never find alumine in a state of absolute purity, but always combined with other elements.

It is after silica, the most extended of the earths, generally. It has a great affinity for water and a great tendency to unite with the silex.

Clay is a chemical compound of silica and alumine and nearly in the proportion of 60 of the first, to 40 of the latter. But this is not merely a mixture, it is a chemical combination, which cannot be decomposed, except by the chemical agents. Soil contains besides a large proportion of silex mixed with it in the form of sand and gravel. One of the characteristics of clay is to adhere to the tongue, owing to its avidity for water. It absorbs water and becomes a greasy paste, and when it is saturated with water, it will not permit water to pass through it. This impermeability of wet clay is the cause that beds of it which alternate with beds of sand, cause springs of water on the surface of the earth.

Lime.—We find the carbonic and the sulphuric acids most commonly combined with lime. Its combination with carbonic acid produces carbonate of lime, and with sulphuric acid, sulphate of lime or Gypsum, or Plaster. Carbonate of lime, subjected to a high heat, loses the water and the carbonic acid it contains, and then it is called *Quick lime.*

Marl is a combination of clay and carbonate of lime, in which the latter predominates. It is considered to be insoluble in water, but nevertheless it is dissolved in some measure by means of carbonic acid gas. And this is the way the soil transmits this salt to plants.

Sulphate of lime is produced sometimes in great masses, sometimes crystalized and sometimes pulverized and mixed with soils.

Magnesia is much less extensively spread than lime, and most commonly it exists in the form of a carbonate and mixed with the clements of soil; however it is met with in masses in some localities. The carbonate of magnesia has all the chemical poperties of carbonate of lime, and replaces its effects in soils deprived of the former. As it absorbs more water than carbonate of lime, it contributes to render soils more fresh, lighter, more accessible to the atmospheric agents. If there is too much of it however, it renders soils barren, and so does carbonate of lime.

Potash and soda. These mineral alkalies perform an important part in vegetation. They exist in quite large proportions in soils, and are found in plants which draw it from the soil. Straw and wheat contain potash, hence the use of ashes to supply the loss to the soil. In soils deprived of potash, soda will replace it without injury to the crops.

Oxide of iron.—Cultivated lands always contain iron in a state of oxidation more or less advanced, and in proportion varying from one to twelve per cent. *And it is this which gives to earths the deep shades of color—for their primitive color is white!* These shades are black, yellow, brown or red. The black color of earth indicates the first degree of oxidation, and the red the last degree of it. This coloring of soils has the effect of attracting light and heat, and is the principal reason why oxide of iron concurs in fertilization. Those soils which contain but a feeble quantity of it are consequently white, cold, and always backward in vegetation. But an excess of the oxide of iron in soil has also inconveniences. It is also thought that one of the important properties of this oxide is to *fix the azote of the atmosphere, under the form of ammonia, &c., &c.*

MANAGEMENT OF THE FARM.

To know how to command is a very rare thing, because that quality proceeds from character rather than from education—for the most common natural disposition is feebleness, which weakens authority or anger and renders it odious. The command should be, *firm but calm.*

BENEVOLENCE.

The system of intimidation on a farm, is a bad administration.—Endeavor to inspire affection, not fear. This is much easier than many think it is. It is not sufficient for this purpose, that you are

just, humane, moderate and firm, if at the same time you are austere and incommunicative—your men will tax you with pride—a very serious reproach in their eyes—and they always put this in the very first line of their griefs against their master. They willingly feel your superiority in rank and intelligence, but their self love is humiliated when you make them feel it. On the other hand, they are very sensible of affectionate and benevolent words.

Mr. Meigs mentioned the observation of James Madison, when he was President of an Agricultural Society, having been President of the United States, viz: That on general level surfaces, all over our globe, soil averages about *one foot in depth, just enough for our spade and plough*, and below which *no seed will germinate*. That one foot is the great *laboratory of human life*.

Mr. Wakeman presented the following communication from the Secretary of the State Agricultural Society.

AGRICULTURAL ROOMS, ALBANY, DEC. 3, 1847.

To the New-York Farmers' Club.

GENTLEMEN: I forward through T. B. Wakeman, Esq., samples of wheat received from S. Bentz, Boonsboro, Maryland, showing an important improvement in preparing wheat and other grains for flouring.

The improvement consists in taking the outer coat or bran from the berry *previous* to grinding, and it cannot be doubted, that if this can be economically and expeditiously done, it must prove of great importance to the growers of wheat as well as to manufacturers of flour. The sample A. sent you, is white blue stem wheat; B. the same variety of wheat with the bran removed, showing a most beautiful berry ready for flouring. The bran is removed perfectly without the least injury to the berry, a sample of which accompanies the wheat. The advantages which are claimed for this process are the following:

1st. All varieties of wheat, White, Yellow and Red, &c., are at once *improved* from 5 to 15 cents per bushel, and the good varieties of Red wheats will make as good and fair meal as the white varieties now do, which ordinarily sell at 10 to 15 cents higher per bushel, than the Red.

2nd. The outer coat being taken off before grinding, all impurities at once are necessarily removed, and the brown speculas which detract from the quality of the flour, will not be found.

3d. As a general matter it takes 4¼ bushels of average wheat, or 270 pounds to make a barrel of flour weighing 196 pounds. Upon this system nearly all the meal that ordinarily becomes incorporated with the several varieties of offal is saved and put into the barrel, and is added to the yield, which is a saving of from 40 to 52 pounds of wheat over and above the average amount of flour used in every barrel of flour, as now manufactured.

4th. From 25 to 50 per cent of time is saved in grinding upon this system, over the ordinary mode, and the work done much more evenly and regularly, as the usual difficulty of specking the flour with the bran is entirely obviated, and the contingency of having super flour cut down to fine, with common skill in grinding cannot take place.

5th. This system will produce the best Hot Climate Flour known in the world. It is an admitted fact that the bran, which upon the common mode of grinding necessarily incorporates itself to some extent with the meal, is the chief cause of the flour *souring* in hot climates.

6th. In addition to the *unbraning* of the berry, the wheat undergoes an operation which superadds to the hot climate principle, and which must supersede every other plan to preserve sweetness in the flour. This will be found to be of great importance to the shipping interest, and to the dealers in hot climates, especially.

Major Hancock also presented a letter from Mr. Sparum, of Pennsylvania, on the subject of yellows in peach trees.

PROPAGATION OF THE YELLOWS IN THE PEACH. ITS PREVENTION.

For many years the peach tree has been subject to a disease known as the yellows. This disease seldom makes its appearance before the tree has arrived at maturity, as its great vigor and rapid growth appear to preclude the developement of the disease previous to the tree fruiting. Much time, labor and research, have been spent in fruitless endeavors to eradicate this disease after it has made its appearance in orchards, and the only result arrived at is the necessity for replanting new trees, to take the place of old ones at short intervals of time. Many applications to trees have been recommended, and potash, lime, tabacco, banking up trees in winter, &c., have had their advocates. Although individual cures may have been effected, or decay for a time arrested by the remedies, yet such instan-

ces are extremely rare; and when applied on a large scale, are shown to be without value. The disease, a true consumption, still continues, and will continue unless some radical method is adopted to eradicate it. From my own observation and experience, I am led to the belief that this formidable disease has been much aggravated and spread throughout the country, by budding from trees containing in themselves the seeds of incipient consumption, not yet externally developed. A bud may be taken from a tree apparently sound, but after a time both trees will be affected and decay, and so on ad infinitum. The only remedy appears to be to bud from trees which are known to be entirely sound, and in which no disease has appeared for several generations. By taking this precaution, growers may rely upon having trees that with ordinary care will live and bear fruit for many years, and in time eradicate this evil. That the disease, however it may have originated, had not its origin in either the soil or the climate of this latitude, is pretty evident. Natural trees can now be found in great numbers, of many years growth, alongside fences and other neglected situations, perfectly sound, and likely to remain so. These are the trees to propagate from, and although the fruit is generally of an inferior quality, yet a cultivation of a few years will render it of superior flavor.

Roswell L. Colt, of Paterson, in a letter to Mr. Wakeman, which was read, recommends premiums in money to be given to exhibitors of cattle and stock, instead of medals, when it is desired by the competitors.

Mr. Wakeman moved the appointment of a Committee to select delegates to the State Agricultural Society.

Adopted:—And the following committee was appointed:

Dr. Underhill, Samuel Van Wyck, Col. Clark, Judge Livingston, and Mr. Wakeman.

Chairman. The regular subjects are now in order. That is Agricultural Colleges. The ascent or descent of manures in soil, and liquid manures.

Mr. Meigs. As to the position of manures in soil, it is now thoroughly recommended in gardening, to begin on one side of the land, dig up the soil down to the subsoil, carry the soil thus taken off to the opposite side of the ground, then put manures in the trench thus

made, and then dig in the manures with the subsoil, then put the next spading of soil over the manure, and so on, so that the manure will be about one spade in depth from the surface.

Dr. Underhill. I would put the subsoil on top. It is best to plough subsoil up to the surface, it becomes dark mould in a short time.

C. H. Hall. Manure at a moderate depth will remain dormant. It must be near the surface in order to be affected by the heat of the sun, or it cannot ascend.

Dr. Underhill. Manure should be put as deep again in loose, porous soils, as in stiff clay soils. Nothing ascends but the elements in solution or gasified, and under the influence of heat. In our country the solar heat is very powerful, but in England it is feeble, only penetrating a few inches into the soil. I have recently visited a valley of rich soil, which has been filled up with poor barren land to the depth of from seven to fifteen feet, about seven years ago. Now the growth on this once barren land is remarkably vigorous in grape vines and plants of various kinds, much more so than on some of the lands adjacent. No doubt the roots of the plants run down, but here it is perfectly evident that the rich elements of the valley beneath, ascend to the surface through the sand.

When the winter breaks up in spring, the ground cracks, then rains carry down some of the manure. I dig deep about my fruit trees to let manure sink deep, and I find the best fruit on the trees is derived from the lower roots which are deep, never on the lower limbs which are supplied from those nearest the surface of the land. The moisture at a depth is greatest.

Mr. Hall. The best plan is to denude the limbs, and let in the light of the sun. Too much top to a tree is not considered favorable in England, it lessens the flavor of the fruit. Manure on the surface or near it; it is not convenient if it is possible to put the manure several feet deep about trees or elsewhere. This question must have further discussion. We must look into it fully.

Judge Van Wyck. The tendency of gas is upward, that of water downward, and may carry down some of the elements ten or twenty feet, out of the influence of the heat of the sun entirely. The Cereal grains cannot reach manures unless they are near the surface of the soil.

Dr. Underhill. Put manure ten inches or a foot deep, and not five inches as is usual. Gurney's plan of covering soil with matting or a thick coat of hay or straw, is found to enrich the soil under it rapidly. These coats prevent the escape of the ascending elements of manure. In Madeira, for their grape vines, they dig trenches sometimes five to ten feet deep, put in manure, fill up and plant vines on it.

Mr. Hall. These are practiced on side hills, so that the vines are planted in steps or terraces, that occasionally makes the depth adverted to by Dr. Underhill. Little manure is generally used on vines in wine districts, and that commonly on the surface of the ground, and this is the custom on some of the most choice vineyards in Europe.

Dr. Underhill. In some parts of Madeira, where the vines are not so good by a third, they put on manure, not deep. But where manure is put down deep, it supplies the vine for a century.

Mr. Meigs. Columella, about eighteen hundred years ago, recommended for grape vines a trench not less than three feet deep, with some stones and bones at the bottom, then good soil over them. He astonished the Roman world with his grapes, as well as many other vegetable productions.

Judge Van Wyck. It is said that the leaves of the grape vine are the best manure for it. How does Dr. Underhill account for the total disappearance of the muck which he put under some of his vines?

Dr. Underhill. By capillary attraction, which causes water to rise three or four feet in soils, at least, by solar heat. In that experiment the sandy soils became in four or five years as dark colored as the alluvial muck below, and the sand in which I had put the muck was as clear as it could be, having not the slightest sign of the muck which I had put in. This is a fact which I am compelled to believe if the opinions of an hundred million of men were opposed to it. I base all my agriculture on these facts, and I believe that in our State and in Jersey only, hundreds of thousands of dollars are annually thrown away, by putting the manures too near the surface of the soil. Opinion is nothing when compared with truth, which is eternal.

Judge Van Wyck. I believe that Dr. Underhill is right to some extent, in his theory. Good rich soil will retain the rising gases for some time, for the use of plants; it also retains the moisture, but when it is exposed for a time to a hot sun, they are drawn out. Moisture is indispensable for the solution of the essence of manures. No doubt manures should be put deeper in loose porous soils than in more compact ones. Still the depth of manures must be suited to the peculiar wants of plants, as to depth, &c.

Mr. Hall. If the gases escape from the soil, are they lost? Do they ascend to heaven, or return to the earth for the benefit of plants?

Dr. Underhill. Yes sir, they do ascend, and on the shores of the Atlantic may be wafted to enrich the ocean: or if near the deserts of Africa, to fertilize them. The elements of manure, the salts, are drawn up near to the surface of soils, but not one quarter, not one half of them, escape in the form of gas.

Mr. Hall. Carbonic acid gas ascends by day, and descends to soil by night.

Dr. Underhill. There is about one per cent. of carbonic acid in atmospheric air, and plants consume a portion of it by their leaves.

Judge Van Wyck. It is well to recollect that in this country droughts are seldom. We have a large proportion of temperate seasons.

Mr. Meigs. We have full opportunity in our greatly increasing city, to examine the subsoils brought to light by the parings and levelling of the land. Who has not observed, and I often have, that where a few feet of the rich old surface soil has been taken off, the remaining subsoil was guiltless of all fertility? Not a thousandth of the rich soil, the humus on the surface, since the flood, has dedescended three feet into the subsoil. A barren waste can at any time be made by either paring off a foot or two of the surface of your land, or by the fashionable practice of skinning it by over cropping without any returns of manure.

Mr. Sherwood. In England we are in the habit of placing manures on the surface, especially in the grazing districts. It is done annually, and is of incontestible benefit. In the south of England they manure in the fall of the year on the surface, and in the spring

following rake off the straw, &c. The manure thus laid on the surface, then, must assuredly go down, for if it ascended there would be a total loss of it.

Dr. Underhill. In winter no doubt it descends to a certain depth.

Mr. Sherwood. Well, then, in our clover lays with manure on the surface we find the plants enriched, how could that be if the elements of the manure ascended into the air? At east Grinstead, or near it, (in England,) they have wet farms, partly drained; there, they say, manure is of no use to the land until it is well drained; for the essence of the manure is leached down, and carried away by the drains, and that they find rich deposits formed from this source, at *the adyts* of the drains and they there take it up and use it over again as manure. Those drains are about three feet. But in support of Dr. Underhill's theory, is it true that *sub-soils are always poor.* In the western prairies of our country I have observed the depth of the soil to be from three feet to eleven, twelve, sixteen and even *twenty feet.* There the soil now is, whence it came is another question. The subsoil, when turned up, soon becomes enriched by its exposure to air, rains, heat, &c. &c. In England the apple tree is benefited by repeated diggings about its root, but if you touch the roots of cherry trees they suffer. Tell an English farmer to plough fourteen inches deep and put his manure down there and he will tell you that you put it out of the reach of the plants which require it when they are young and sound, *and that they want their share of it early!*

Dr. Underhill. I said that my theory was not so applicable to the moist climate of England as it is to the hot sun of our country. As to the deep soils of the prairies just mentioned, they are deposits from waters, beyond all controversy.

Mr. Aycrigg. I have noticed the roots of an apple tree descending twenty-five feet in the earth and even at that depth it still went lower down.

Mr. Meigs. Roots of Lucerne have been found in porous soil, thirty feet in depth.

Mr. Meigs remarked that the Scientific Congress in Italy was an event as well worthy of notice, as the assembly at Venice of 1472, men of science and about 2000 lovers of science, held in the Ducal

Palace, commencing on the 3d of September, 1847, and continuing for three weeks. The assembly had under consideration, physics, mathematics and mechanics, geology and mineralogy, geography and archæology, agriculture and technology, botany and vegetable physiology, chemistry, zoology, comparative anatomy and physiology, surgery and medicine.

Discussions were had on zelluric electro currents, on the properties of four remarkable points of the ellipse; on diminished danger of balloon ascensions, on steam boilers, railway dangers, geometrical superfices, meteorolgical and magnetic observations at Trieste, the declination of the needle in the Adriatic, the salt works of Venice. Announcement of the plan of the society for the encouragement of arts, &c. of Milan, to publish an account, on the power best suited and applied to railways.

Dr. Underhill. In France the roots of a grape vine have been found sixty feet below the surface, seeking the water at the bottom of a well.

On motion of Judge Van Wyck, the subjects of the day were ordered for the next meeting of the Club.

The Club then adjourned.

H. MEIGS, *Secretary.*

Dec. 21st. 1847.

Judge Livingston in the Chair.

Mr. Meigs, read the following extract made by him from Varlo's Husbandry, (viz:)

A new system of Husbandry by C. Varlo. Published in Philadelphia in 1785, in two volumes 8vo. Vol. 2, page 342.

TRENCHING GROUND WITH THE SPADE.

"Near Glasgow, I observed farmers at work on worn out land, digging two or three spit (spade lengths), deep. They throw the

top soil to the bottom of the trench. Over that they put the second spit and on top the third spit, so that the bottom about three feet deep becomes the top soil. After such trenching, the land will, without manure, grow five or six good crops, and will grow corn from generation to generation if occasionally trenched again. Some think this fabulous, but I have seen it with my own eyes, and never saw better, wheat, oats, or barley. Land even poor is generally covered with a coat of some sort, either stubble or grass, or weeds, which being thrown into the bottom of the trench and covered two or three feet thick, it ferments, rots, and evaporates its volatile spirits, which penetrate through every particle of the earth above it.

"The laborers on farms get a shilling a day in summer. Eggs, 7 and 8 for a penny. Beef and Mutton, 2½ pence a pound. Good chickens, 2 to 2½ pence each. Turkeys 10 pence each. Roasting pigs from 12 to 15 pence each."

And the following translation by him from the Portuguese (viz.)

I translate from the O Auxiliador da Industria Nacional of Rio Janeiro, January 1847, the following just remarks on the indispensable necessity of the filature to silk culture (viz.)

"The production of cocoons is absolutely worth nothing without the organization of a filature. The raising and collecting of them becomes a source of depression and disgust where there is no means of sale or filature. To send them to Europe to be reeled is utterly impracticable. The production of cocoons and their reeling must be organized at the same time. And we affirm without fear of being mistaken that the filature is the greatest difficulty for us to conquer. The best method to obviate the evil will be to establish filatures, central to the growers of cocoons.

"Mulberry trees growing on hills or mountains have, by long experience proved better for silk than those grown in vallies or on rich soils.

"According to the last census in the department of De Gard in France, there were upwards of two million three hundred thousand mulberry trees on 16,620 hectares of land (about 3600 acres.) The silk of Alais holds a well merited reputation in the manufactories of Lyons, which is owing in part to the ability of the reelers, but still more to the good quality of the cocoons, which is due to the care of

them in a manner, but principally, to the leaves on which the worms are fed.

"The most terrible evil to silk worms is muscardine. This name is given to such as become white. This disease is contagious.—There are two kinds of this disease. One is ordinary, and the other spontaneous; the last is the most dangerous."

Manuel Populaire D'Agriculture, by J. A. Schlipp Professor of the Royal Agricultural Institute of Hohenheim, in Wurtemberg. Paris, 1844.

A prize essay, adopted by the agricultural congress of Germany, held at Brunn in 1840, and much admired in Germany.

This is one of the volumes given to the American Institute, by Alex. Vattemare

I translate from it the following :

" Barley. A new kind from Asia has been cultivated. It is called Nampto Barley. It yields a crop four to five times greater than any other barley, It requires rich soil suitable for barley—is sown in spring as soon as the soil is dry enough. It ripens in ten or eleven weeks—it is best to sow it in drills—it is best not to soak the seed before planting. It weighs 80 kilogrammes per hectolitre, about 67 pounds the bushel. It is excellent as a green crop for cattle. In Asia two crops are had in the year. It has no chaff. The chevalier barley weighs 57 pounds the bushel.

Dr. James E De Kay of Syosset, Long Island:

Presented to the club, several quarts of acorns from some of his English Oaks—the Quercus Robri.

He states that he set out the young oaks about eight years ago, that they appear to thrive very well, some of them having attained a heigth of more than thirty feet—the foliage is very beautiful, and the trees of very symmetrical shape. These acorns should be planted in beds this season—and in two or three years will be fit to transplant.

Alexander Walsh of Lansingburgh, sent to the club, directed to Mr. Wakeman a valuable article on the culture of silk in our country, which as it appeared in our paper a few weeks since, we omit.

Alanson Nash of New York presented a paper on the culture of wheat, by his father in Hampshire county, Massachusetts, from which we make the following extracts.

"The soil on which the wheat was sown, a third of an acre, is formed from the decomposition of granite, Mica slate and other primitive rocks. Great care was taken in washing the seed wheat in clear water, until nothing but pure seed was left—then about eight quarts of clean slaked lime were put into the hogshead containing the seed wheat, and well mixed and stirred in with the seed, and then the water added and stirred until at length the water ran off clear from the wheat. The wheat then remained in the hogshead over night, and became swelled, almost ready to burst. Then ashes of oak, hickory and maple, the woods burned in the house, were well mixed with the wheat, until the seed was dry enough to handle, when it was immediately sown and harrowed in.

"The seed so heated had been thoroughly tainted with smut, but as appeared by the crop was entirely eradicated. The straw was vigorous—did not lodge. The yield was eighteen bushels of best wheat. The manure applied was from under the stables, where cattle had been housed for several years and was thoroughly impregnated with urine.

"Another experiment was tried with wheat on one acre sowed with the same wheat, but without manure. Indian corn had been grown on it the year before, manured with hog manure in the hills. The north half of the hill was sown with the *washed wheat as before*, the south half with the same wheat *unwashed*, and no lime, ashes or anything else. The result was that the straw and wheat on the north side were clean, fresh, the berry heavy and full. On the south side almost a total failure, not yielding more than ten bushels per acre.

"Of the prepared wheat my father sowed at about the rate of six bushels per acre!"

Chairman. Barley flour mixed with buckwheat meal makes superior cakes!

Mr. Pike. I have used one third barley in my buckwheat cakes, and find them much the better for it.

Horace H. Day, of Courtlandt St., presented some specimens of gutta percha for examination,

Aaron H. Palmer, is now and has been long engaged in investigating new sources of commercial profit especially in the Eastern world, stated to this Club, that the Percha is a gum obtained from a large tree which abounds in the Malay peninsula, in Borneo, Celebes, &c., and that it attains six feet in diameter. In many respects this gum resembles caoutchouc, but has not yet been subjected to critical chemical examination, such as its extraordinary qualities would warrant. It is soluble in turpentine—a varnish may be made of it. At the temperature of the atmosphere it is almost unelastic. In boiling water it softens to a pulp, and may then be moulded in any way and retain the forms when cold. Acids and the re-agents do not appear to affect it, nor damp, nor changes of the temperature of the air.—When in the pulpy state, it may be forced through small holes, producing threads which when cold are said to be as strong as catgut. Cloth woven with a portion of these threads is exceedingly strong. It is believed useful for many purposes, more so than any other substance yet known. Its price is advancing.

Mr. Wells, of Northampton, presented a specimen of gutta percha prepared for bookbinding.

Mr. Wakeman. We are a part of the State Agricultural Society, and we ought to be strongly represented there. We have made a good and a just impression at Albany in reference to our petition for an Agricultural School.

Mr. Wakeman then moved for a committee of three members to frame a petition to the Legislature for an Agricultural School and Experimental Farm. Seconded and carried.

The Chairman named on that committee, Messrs George Gifford, Meigs and Wakeman.

The Chairman then called up the subject of the day.

Judge Van Wyck observed, that certainly some portions of manures descend, and others, the gaseous for instance, ascend; the more porous the soil, the deeper the descent. As to subsoils, there is no doubt that upon their being brought up and exposed to the air, rains, light, heat, &c., they gradually acquire some fertility.

Mr. Pike. The matter resolves itself into two ideas. Manure contains salts and also gases, so that the advocates for ascent and de-

scent are both right. One goes up and the other down! It would be better to inquire what is the best manure, for instance, what of the liquid manures?

Judge Van Wyck. Dr. Underhill has spoken of the benefit to soil by covering it, for a time with matting, hay, straw, &c., as arresting the ascending elements of manure. But do not those substances on the surface impart to the soil below them some fertility? Such is even the advantage of mere shade to soil. A covering of brush gives a vigorous growth to plants.

Mr. Meigs spoke of the views expressed by late French Agriculturists, of the benefits of shade to vegetation. The clouds were intended to answer that end. That in some cases it is proper to form artificial shades over some plants. That deserts are formed by long continuance of cloudless skies.

Mr. Pike. Gurneyism is found useful even in moist England. Put a cloth over a load of dung when you move it; the effluvium, ammonia, from it is so strong, that no *lady can faint* where it is near. In 1834 I went to Sheffield, (England) on the first day of January, meant to leave there on the second, but it seemed to me to be snowing fast. It was, however, to me a singular snow, so perfectly even every where, and so thin I could hardly make a foot print in it. What is this? said I. O, ho, it is Rime! I think liquid manures are of the first importance, and we should have the best methods of saving them. I conduct that from my stable to a row of hogsheads in my garden. I pump it onto my solid manures, and save all that runs off. Farmers should remove manures only in cloudy or falling weather. I put peat into my heaps, and everything else. I make a layer of solid, about a foot thick, then about three inches of mineral manures, plaster, &c. I want to know the precise proportions of all the best components of a good manure pile. This past season I planted Ruta Bagas in the fore part of July, and many of them weighed ten pounds each.

Judge Van Wyck. Put soil in your compost pile, it holds the gas: add charcoal, that fixes the ammonia.

Mr. Pike. Peat is excellent. Muck requires two or three years of exposure to the weather before it is good. I have some four years old, I plough it up once in a while; mix thirty bushels of lime with thirty of muck.

Mr. Kidd of Westchester stated that petitions for our agricultural college were circulating in Westchester, where there was a very favorable opinion held of the value of such a system of agricultural instructions.

Mr. Wakeman moved that the committee hereafter appointed to select delegates to the State Society, and that to frame a petition to the Legislature, be united, with power to add to their number, and to confer with members of the Legislature, and that Judge Livingston be chairman of the joint committee. Seconded and unanimously adopted.

Edward L. Youmans. It would be well that the system to be pursued in the Agricultural College should be well understood beforehand, to give it success with the State government and the community.

Mr. Meigs remarked that our most valuable systems required constant support. That it was necessary to maintain what the poet called *iteration.* It was necessary to repeat even once a week the most important duties. It is proper that we should keep the new plan before the eye steadily. If good it will soon fix that eye upon it, it will prevail.

Mr. Wells, President of the Horticultural Society of Northampton, Massachusetts. *Ring your bell at every crossing!* Your object is worthy of all consideration.

By composting we save much of the most valuable parts of manure, We, in Northampthon, have attended much to fruit. Our Horticultural Society, of which I have the honor to be President, was established about the same time your Farmers' Club was. It was small at first, but it waxes stronger and stronger. We have prepared the orchards for plentiful crops of the best apples. Our peaches this season were equal to the best of the New-York markets. We also distribute the most valuable seeds of all sorts, and select scions from best fruit trees. We are looking for the speedy establishment of an Agricultural College among us, beginning with private means, and carried out by public aid. It is called Smith's Agricultural College.

The Secretary distributed seeds of the Affghanistan Lucerne among members.

This Lucerne is said to be superior to that of Europe or America.

Subjects adopted for the next meeting—Agricultural Schools and Experimental Farms. The Club then adjourned.

H. MEIGS, *Secretary.*

January 4th, 1848.

R. L. Pell, of Pelham, in the Chair.

Mr. Meigs said that among the old writers upon agriculture, Jethro Tull, of England, who wrote in the fore part of the last century, still maintains a good standing. I translate from the Cours D'Agriculture of the Count De Gasparin, published in Paris in 1847, a copy of which is among the valuable volumes presented by Alexander Vattemare to the American Institute, the following view of Tull's theory.

The principle of Tull was, that the earth reduced to fine particles, was the principal nourishment of plants; that the salts contributed to attenuate the particles, water to extend the parts, and air and heat to give it a suitable activity, but that still the earth always remained the essential part; manure operating only to divide the molecules of the earth by fermentation. Therefore, admitting that the more we divide the particles of the earth, and the more we multiply its interior pores, the more we augment the surface of these molecules, so much the more do we bring the earth in contact with the plant, and render it the more fertile. That cultivation consists in working soil often, and maintaining its pulverized condition. That these workings must be incessant during the vegetation of the plant, and that manure is but a costly auxiliary, which we ought to repudiate, it being more advantageous to augment fertility by labor than by manure. First, because it is often difficult to get a sufficient quantity of it, for the straw on twenty acres is hardly enough to manure one acre. Second, because plants raised with manure have not that agreeable taste which those have which are raised without it. Third, manures attract insects to the plants, and they injure them. But we must work, and work over and over again, to raise good crops.

Mr. Meigs read some other interesting articles which he had translated from the works presented by M. Vattemare, which will be published next week.

Josiah Dutcher's Plough. As early as 1806 the attention of Mr. Dutcher was directed to improvements in this implement, and he has obtained two patents since that for improved ploughs. In 1806, the ploughs in use were the hog plough, said to be of Dutch origin, and the bull plough, said to be a Yankee invention. About 1809, a cast iron plough, with wrought iron share, said to have been patented by a Mr. Peacock, was in use in Albany and the adjacent counties. Mr. Dutcher patented his first plough in 1822, but he had presented his specification in 1819. The mould side of his patent plough was larger than any known, and more concave. The landside was twice as wide as any ever made, that is from six to seven inches wide. The share, the most essential of his improvements, was constructed with a projecting piece called a shin share. This renders the plough twice as durable, and is now universally adopted. Another important improvement consisted in making the bottom of the plough half an inch concave from point to heel; this was a great improvement for rough or stony land.

Mr. Dutcher's zealous efforts to improve the plough have not been rewarded. Others have reaped benefit from them, while he has expended much money and time in vain.

Mr. Wakeman called for the reading of the memorials prepared by the Institute, praying from the Legislature a grant of power to the Institute to establish an Agricultural School and Experimental Farm. They were read and the memorials unanimously adopted by the Club, and one of them was directed to be signed by the Chairman and Secretary, and the other by the members present.

Jesse Oakley communicated the following remarks from one of his intelligent English correspondents, on the subject of the cheese, pork and beef, shipped from the United States to England.

"The American farmers who make cheese for this market, use excellent materials, but seem to want method. For in the same parcel, some is worth eight pence and some two pence a pound. Bad pork and beef have been sent, until some of the poor people will not buy it. A grocer told me that the pork wasted too much in boiling, that they thought it must have been fed on bad grain or slops, or potatoes, but that he could sell any quantity of it if it was good. There are customers here, by thousands, for really good articles. Pray tell this to such farmers as it may interest.

Mr. Wakeman presented a paper on the potato, from that indefatigable and amiable friend of agriculture, Alexander Walsh, of Lansingburgh.

He said he had been to his knowledge, for a long course of years, an ardent and unostentatious worker in the cause of agriculture Few know how much we are indebted to his steady, persevering exertions.

He was, as I have understood, the leader in starting the Cultivator, a periodical whose benefits are everywhere acknowledged.

And even now, debilitated with a broken constituton, his zeal is unabated. He employs his remaining strength to the extent of his powers, in the same great cause We are continually hearing from him by letters, by presentations to our Club, and through the press. I feel that a high tribute of respect is due to Alexander Walsh.

J. D. Williamson. I have just returned from a visit to the South. I carried with me a collection of seeds made up by the Secretary of this Club, and when I distributed them among my friends there, they promptly undertook to return others that might be valuable here; unfortunately I lost the greater part of them in the explosion of the steamer A. N. Johnson, on board of which I was a passenger.

I found in Tennessee a field of rice on highland, some fourteen hundred feet above the level of the river. This presented an extraordinary crop. By measurement, nearly as we could, the crop must have been at the rate of two hundred and fifty bushels per acre. This field is on Walden's Ridge. The seeds had been sown in drills. I present a specimen of this rice to the Club. I present also Moscow beans. These were not many years ago brought from Russia, by Senator Whitesides, of Tennessee, he found them in the Botanical Garden, at St. Petersburgh. They flourish in Tennessee, and are highly esteemed, not less so than the Lima. The pods of the Moscow, you see, contain more than a dozen each, of beautiful white beans. I present also sweet potatoes and yams, the acorns of the white oak of Tennessee, of extraordinary size, and of which perhaps twenty bushels fall from one large oak. The small ones on the ground are eaten by swine, the large ones sprout in the spring and the rootlets begin to penetrate the ground, and in this state the swine are very fond of them, because the process of vegetation has rendered them sweet and palatable. I present a turnip, one of a crop on

high ground, the field of six acres was covered with turnips, much of this size. This one on your table weighed about fifteen pounds I present also, Turkey corn, a grain somewhat resembling millet, and used there to feed young turkies. It has also the name of Timothy. I present also cotton grown from the seed of Sea Island cotton, on high ground in Tennessee. Trials of this cotton had been made there, and eight hundred and three bales of it had been raised, and last year four thousand bales of it were raised. I present also white and reddish colored corn, of which the crops are immense. The grains of the white corn are remarkably large.

Charles Henry Hall moved a vote of thanks to Mr. Williamson, for these presents of new varieties of seeds. Judge Van Wyck seconded the motion, and it was unanimously adopted.

Mr. Hall said that the Sea Island cotton and rice, growing on lands fourteen hundred feet high, were indeed interesting to agriculturists, and those who receive them should carefully report the results of the experiments which they may make with them. If we had, as we ought to have, an Agricultural College, we should know what to do with them. By careful planting and cultivation done in the best manner, we should be able to introduce all those which are useful to our country.

Mr. Meigs said that the proposed new system of Agricultural education would be conducted with a view, not only to the varied labors of the farm, in the most perfect manner, but that the experimental farm would produce all the best seeds and plants—which would be sought after by all farmers, because they would be entirely free from those frauds so general in the seed trade. This would be guarantied by the officers of the Institution—at the head of whom there will be some patriotic, able, independent citizen—without compensation, who will glory in governing it with honor and integrity. No selling of unfruitful seeds or cheating grafts—no dyeing of old and worthless seeds, as is now practiced. No mixing of the old and the new—no need of another Sancho Panza, Governor of Baratavia, to punish the crime of mixing old nuts with new ones. The buildings will be of simple and cheap construction—such as a first rate farmer would erect. We must not build and lay out all the money—half finish and then remove. The most exact economy, the most perfect order will be observed. The precious seeds and plants will be kept and delivered to the country, like so much specie from the counter of a bank—and the whole benefit will be for our country, and not for this city—for here we have no farms!

Judge Van Wyck. I like the sentiments expressed by Alderman Hall and our worthy Secretary. Those who receive seeds and plants from this Club ought to return a portion of the product of them to us, for further distribution. We can succeed in the founding of the Agricultural College, if we fairly exert ourselves. There may be some opposition in respect to location—but the sentiment is general and powerful in favor of our plan. We have funds on hand —a Library, and ardent friends of the cause. No rivalry ought to exist—for we must begin !—after a well tried and successful trial of the system—a great many more like it will be established. We must however begin, and that immediately.

Mr. Wakeman. Many useful applications to the Legislature fail for want of a little attention. The members of that body are so absorbed by the multitude of matters under their consideration, that one of high importance may fail to attract their attention, unless its friends are vigilant. Let us therefore begin early—write to our friends, keep the subject awake—convince them that no spot could be selected superior to the vicinity of this great city—for a *first foundation.* To this grand focus of commerce all things crowd, as well as men—here the grand experiment can be well commenced—tried under the eyes of tens of thousands of our citizens! Some suppose that this might increase the wealth of our city—so it will, but not directly—the benefit must first go to the farms of the country, and then the benefit, or some of it will at last reach the city.

Charles Henry Hall. I differ somewhat from Mr. Wakeman as to that matter. I think that our fellow citizens of the country will say that this is our city! What interest can they have different from ours! If we educate fine agricultural scholars for the country, what more can we ask? The city proper has little if any agriculture. Here the young and the old can come, such is the facility of travel, to hear evening lectures on agriculture, and return to their homes in good season. Nothing of the kind could be so easily done elsewhere.—Here we receive such presents as those now brought to us by Mr. Williamson—not so easy in the interior. What facility there is here, in the visits of intelligent men, and the seeds, plants and animals, books, &c., which they bring with them! What facility for all men, from the greatest distances, to come here, see, buy, and carry home. Mr. President, we should keep a record of the names of those citizens who receive seeds and plants from us, that we may know the results of our operations. I have received to-day, the Turkey Corn, the Cotton, Moscow Beans, and Upland Rice.

Ira B. Underhill, of Burlington, N. J. I have received the Turkey Corn, Moscow Beans and Rice.

A. H. Washburn. I have received the Beans, Turkey Corn, and some White Corn of Tennessee.

Judge Livingston. I have received the Cotton, Yam, Beans and Sweet Potato.

Mr Maurice, of Long Island. I have received the Rice, Cotton, Beans, Turkey Corn, and White Oak Acorns.

Other members, who had received some of these seeds, had left the Club before they had been asked the question as to their dividends. The plan of recording the receipts, was, however, unanimously approved.

Judge Van Wyck moved for a committee to attend, in Albany, to the progress of the memorial for the Agricultural School.

Mr. Wakeman. Yes; I seocnd the motion for a committee of three or four members of this Club—one, at least, to remain in Albany as long as may be necessary.

The motion was unanimously adopted, and Judge Van Wyck, Dr. Underhill, Charles Henry Hall, and Colonel Clark, were appointed unanimously.

Mr. Hall spoke of the high value of the rice on the table—hitherto grown in only peculiar watered situations—there is no grain equal to it. I ask Mr. Williamson how this rice has been raised?

Mr. Williamson. The poor old Bull-tongued plough was used to plough the land, some three inches deep or less. The rice was sowed in drills, about one foot apart. I gathered the sample, before you, in the field, and assisted in measuring a part of the field, and it was found that the yield per acre was about 250 bushels of the grain. The straw of this rice was preferred by the cattle to green food.

Mr. Hall, Here we have fine black seed cotton grown on high ground.

Mr. Williamson. Yes, sir.

Mr. Hall. Then the question comes, can we raise cotton here?—I move that the Secretary send some of this cotton and rice to our Legislature. Adopted.

Mr. Wakeman. Our proposed college would be a charity. It would save many a worthy lad—set him to a noble work immediately. Many who cannot find employment would find it here. Last year I met a poor beggar boy in the country, a perfect stranger, and told him to come to the Institute and stay until I could find him employment. I consulted Mr. Hall and Mr. Clowes, and they gave the lad money to pay his expenses to West Chester, and a note to Mr. Bell, who examined him—found him worthy of a trial—has him yet, and finds him an invaluable help on his farm.

Judge Van Wyck. The American Institute is now well known, and known to have done great good to our country. An Agricultural College here must continue to grow in value, and from its successful example others will be created, until in process of time, like schools will be established East, West, North and South, and will ultimately be found flourishing on the shores of the Pacific Ocean!—Let us now begin!

Mr. Wakeman. The American Institute has drawn to its Annual Fairs great numbers of people, and a vast amount of the products of the art, labor and ingenuity of the United States, and the last Fair, the 20th, more than ever. One hundred and forty new and improved machines were there presented, side, by side, for comparison.—There more could be learned at once, as to these matters, than an individual could have acquired by travelling about the country to look for them in a year. The students in our proposed college will be taken to these Fairs, and taught to examine and understand the thousands of examples before them. These considerations would weigh greatly with me, if I was a member of the Legislature.

Mr. Hall. Yes! we want this kind of practical education—most especially do we want it in agriculture. Mr. Underhill will please inform us of his method of cultivating Lima beans.

Mr. Underhill, of Burlington. In 1840 I established a small farm, and endeavored to learn how to manage it. The first thing I thought of, was the necessity of having good seeds. I tried first the Lima beans. I spread half a bushel of them on a table, and then carefully picked out what seemed to be the very best of them. Having done

this, I removed the rest, and then spread my selected beans on the table, and picked out from them the best; these I planted, and in six years, by continuing this selection, I succeeded in producing extraordinary beans, such as I am afraid to describe without having them before you. Some distinguished friends of mine, who have eaten them at my table, declared that they could hardly believe them to be Lima beans. They are very large and very delicious.

I want to know more about the *Curculio* than I now do. I have tried to raise the best varieties of Apricot and Nectarine, and at length think that I have a discovery. I first secured my trees to frames, standing within a few inches of a brick wall, (the wall of my house) on the west side, open to all the afternoon sun. The fruit failed. I removed the lattice frames and fastened the branches to the wall. On these I had perfect fruit, some of which gained premiums at the Mount Holly Annual Exhibition. One branch of a Nectarine, which broke loose from its fastening and hung somewhat away from the wall, lost its fruit, while the branches fastened to the wall bore excellent fruit.

Mr. Wakeman asks Mr. Williamson whether the potato disease exists at the South in the sweet potatoes.

Mr. Williamson. No sir! nor in the Irish potatoes, which are planted on high grounds.

Chairman. I have tried on apricots and nectarines, the experiment just mentioned by Mr. Underhill, and have not been so fortunate in the results as Mr. Underhill has been.

Mr. Meigs. On which side did you try the experiment?

Chairman. On my southern wall of brick.

Mr. Meigs. That may have caused the difference of result, however trifling it may seem, that exposure may have been the cause of failure, while the western one would have been successful—*we want facts!* Theory is often at fault.

Charles Henry Hall. I propose for our next subject, Ploughing, including Sub-soiling. Adopted unanimously. The Club then adjourned.

H. MEIGS, *Secretary.*

January 18th, 1848.

Judge R. Livingston, in the Chair.

Henry Meigs, Secretary.

Mr. Meigs observed that the greatly increasing attention of the greatest men, and of the most intelligent governments to agriculture, was an acceptable sign of a future, better than the past. I translate the following, as an evidence of this in France:

ROYAL AND CENTRAL SOCIETY OF AGRICULTURE OF FRANCE.

Account of its proceedings between March 1845, *and April* 1846, *by M. Payen, the Perpetual Secretary.*

This is one of the pamphlets presented to the Institute by Alexander Vattemare. Agricultural industry is the greatest basis of public fortune, of legislative benefits, and an honor to those employed in it. This society has sought to extend its relations as far as possible, with cultivators and societies. We expect soon to be in correspondence with eight hundred societies and clubs of France, all of which have received our circulars and the first numbers of the new series of our Bulletin, as well as the seventy-eight associations with which we were in correspondence last year.

The Minister knowing the importance of these labors, has franked correspondence and specimens at the expense of the government, and also placed six thousand francs as a fund for professors of Agriculture, desiring that the cultivated crops of France should be carefully examined as to their chemical properties. The United States have also entered upon this road of useful and scientific reports and communications, relative to agriculture in New York, Maine and Massachusetts, have been transmitted to this society by Messrs. Warden and Vattemare.

Central Congress of Agriculture, 1846, *on the Amelioration of the Breed of Horses.*

The figure most favorable to extreme speed does not accord with that of the horse of service. To obtain the horse of speed, you must couple the stallion with the swiftest brood mare. To obtain horses of service, you must couple the stallion with brood mares of like class. As a basis for good breed, shall we take the Arab blood or the pure European blood? We have more confidence in the Arab blood, for purity it is nearest to the fountain, and in conformation

it approaches nearest to what we want. That admirable symmetry of the Arab horse, is, however, in comparative miniature. How many generations will it require to produce the requisite size? How many generations? Why, three or four, five at the most. It is almost incredible with what rapidity the Arab horse, transplanted to our climate, increases his stature and form. This phenomenon, however, is easily explained when we do not lose sight of the nature of the soil of Arabia, its temperature, the kind of nourishment and treatment to which the Arab horse is subjected from his birth. A few sprigs of vegetables, dried under a devouring sun, little water, and often none at all, and at rare intervals a handful of barley. Such are the influences under which the growth of the young animal is developed. That he should become sober, active and vigorous, may be readily conceived, but it is equally clear, that under such regimen, it is impossible for him ever to acquire very considerable dimensions, above all if we take into consideration the bad treatment of which he is the butt from his tenderest years. For we must say, however painful it may be to destroy touching illusions, that the love of the Arab for his horse, the carresses of which he is so profuse, the lodgings which he shares with him, the tears which he plentifully sheds when his horse dies, all these cut an admirable figure (beyond a doubt) in our ballads, but, unfortunately, this happens to be one of the thousand *niaiseries*, (fooleries) to which it is high time justice was done. Humbug is a word which we much need, the more the pity. The Arab loves his horse. Yes, no doubt, for he is of immense utility to him. He lodges his horse in his own house. There is a very simple reason for that. He has no stable, and he is afraid to leave him out of doors for fear of his being either stolen or injured by wild beasts. He weeps at his death in a lively manner. That too, is very natural, for the horse is to him as personal property, an essential part. One easily comprehends why one does not smile at losing an animal worth some thousand francs. There is no necessity for that, for such kind of sensibility may be readily found without going far. As for that tenderness of heart, that platonic love, which we have been taught from our cradle, that is quite another affair. We have seen how he is fed, now let us see how he is treated. Mounted at the age of eighteen months or two years, from that moment the saddle never quits his back; his flanks are torn by stirrups which cut like knife blades, his mouth split by bits, the branches of which are as long as your arm; thus the poor beast goes every day, under his master, incredible distances. Does he happen to rest in camp

for a day, then his horse has repose. Unhappily not so. That day, instead of being one of rest, is employed in *fantasia*, the most extravagant exertions and most brutal and violent treatment, so that not unfrequently he perishes or is lamed for life.

From the same work.

Agricultural Precepts.

The indication of good farming is the number of stock. One ox, or what is equal, ten sheep, on every hectare of land, (about two and a half acres).

Pastures which furnish the best butter, are those whose soil has much lime, plaster, or marl. Lime should not be put on soil where it is very wet.

One quart of urine, properly applied, is worth one pound and a quarter of bread.

Wool.

The history of this inestimable production always proves interesting to those public spirited men who love (and labor in) the cause of human welfare. Some such individuals in Scotland, more than a century ago, had with great expense and care carried out the theory, that fine wool is the product of the sheep when reared on cold and almost barren mountains. They had reared a breed of sheep there, whose fleeces were almost as fine as the famous ancient product of Coraxi, two thousand years ago. About the beginning of the war of 1756, the magistrates of a considerable town in the north of Scotland, famous for its manufacture of worsted stockings, desirous of expressing the esteem which they bore for their countryman, *Marshal Keith*, resolved to present him a pair of stockings of their own manufacture, of uncommon fineness. With that view they commissioned a person to purchase in London, some of the finest wool that could possibly be found, without any limitation as to the price. In consequence, some pounds of the very finest Spanish wool which could be picked out by the best judges, were sent to them. When it arrived the magistrates sent for the women who were to manufacture it, and having told them what they wanted, showed them the wool they had got for that purpose. But the women when they had examined it, complained of its quality, saying that it was too coarse, that they could not undertake to draw above *forty heers*, (a heere is a thread six hundred yards long) from one pound of it. But they said that if the magistrates would wait till the Highland

wool came to their market, in the month of June, they would there pick out wool for themselves, and would undertake to spin from it *seventy herees* to the pound. As they were unanimous in this declaration, the magistrates agreed to wait. The stockings were made of the Highland wool, and were valued at five guineas the pair, and were easily drawn together through an ordinary thumb ring, although they were of the largest size. These stockings were sent in a box of curious workmanship, to Marshal Keith, who deemed them worthy of the acceptance of the Empress of Russia, to whom he presented them. In the year 1710, worsted stockings were made at Aberdeen, from Highland wool, valued at thirty shillings the pair, and sometimes at three pounds sterling, ($17,50) a pair. In 1733, similar stockings were sold in Aberdeen for $27,50 a pair. And the Highland wool has been spun to the extent of more than sixty thousand (about thirty-four miles) yards from one pound. Three pair of gloves made of this yarn were bought by lady Mary Drummond, one of the Duke of Perth's family, at three guineas a pair.

In Armenia, the fine wool raised on the cold mountains, dividing it from Thibet, was made into chales (shawls,) being cloths of about a yard and a half long, several hundred years ago.

H. MEIGS.

Judge Van Wyck. The letters read to day, from Judge Tiffany and from Mr. Wilkinson, give us additional reason for maintaining the opinion that almost a public necessity demands the establishment of agricultural colleges, and that it is time to begin with them here, where all the means are together, books, men, seeds, plants, and all things.

Mr. Williamson. Mr. Wilkinson's school was in a flourishing condition, but Mr. Gowan, of Mount Airy, has offered the aid of fifty thousand dollars, for Mr. Wilkinson to prosecute the grand plan of Mt. Airy.

Mr. Wakeman. Our agricultural college would soon have a thousand scholars, many even from Europe. The practical education proposed, will prevail.

Judge Van Wyck. Private efforts will not ultimately succeed in this or any other country; the power of the great public is essential to their success.

Mr. Wakeman presented on behalf of Mr. Day, some specimens of Gutta Percha.

Aaron H. Palmer, Esq., presented on behalf of His Excellency, Senior Ygnacio Gomez, Minister Extraordinary and Plenipotentiary from Central America to the Holy See, *La Revista Periodica.* Weekly Review of the Economical Society of Friends, of the State of Gautemala.

Mr. Palmer also presented a copy of the China Mail, an English newspaper, published at Hong Kong, in China, and containing an account of the valuable China grass, called Ma, its, culture, uses, &c.; from which it appears that this plant, which seems to be a sort of hemp, is an annual crop of immense amount, and its fibre is made into cables for ships, and into the finest fabrics also.

Mr. Wakeman. Col. Travers, of Paterson, has given to the Institute a premium of twenty-five dollars, to be offered for flax. I desire a committee to confer with Col. Travers, on the best mode of applying it.

Dr. Underhill moved that Mr. Wakeman be the committee Adopted.

Mr. Wakeman reminded the Club that the Institute had received from Mr. Vattemare 140 volumes of valuable books, on the principle of national exchanges. Let the members of this Club interest themselves in contributing such books, or seeds, or plants, as may be acceptable for the Institute to exchange. No individual contribution can be received, therefore we must make our returns in the name of the Institute which is a public body. All our contributions will be well received, and all books will find their place in the American Department, in Paris.

John Campbell, Vice President of the Institute. Those seeds and plants which would be considered here of little value, might be deemed very valuable there. I wish to know whether, after all the long investigations as to the potato disease, there has been any definite knowledge gained?

Chairman. Sir, there has been much and laborious investigation, and the answer is *minus.*

Judge Van Wyck. That malady seems to have presented the same phenomena in all parts of the world where it has appeared, and

there does not appear to have been discovered either the cause or the remedy.

Chairman. And yet the early planted potatoes have been safe?

Judge Van Wyck. Not without exceptions, for two or three years ago they also suffered.

J. D. Williamson adverted to the full and voluminous report of the Hon. Henry L. Ellsworth, on this subject, and he remarked that in the south of the United States there had been no potato disease.

Mr. Wakeman stated that the Trustees of the Institute had appointed as delegates from the Institute to the state Agricultural Society, at its meeting in Albany on the 19th inst., all our representatives in Senate and Assembly, and some other citizens. That we earnestly desire to have the County of N. York, whose agricultural interests are in a great measure committed to us, ably and perfectly represented in the State Society.

Chairman.—The Club is reminded that our regular subject is now in order, to wit: Ploughing and Sub-soiling.

Dr. Underhill.—Our common ploughing is wrong, too shallow, it rather invites the roots of our crops to come up than to go down. In our hot climate we can hardly get the roots down too low. The surface of soil is generally dark, or even black, while the subsoil is light color. Plough this yellow subsoil up and the black soil down, and you will soon find that these colors have changed places, the yellow dirt becomes black and the elements of the black soil below have worked up to the surface to do it. Take a door and put it on a piece of dry ground, in hot weather, and in a short time you will find the earth under it moist—it ascends. Even the clover leaf by its horizontal position protects the soil and thus enriches it. The clover leaves are in fact natural Gurneyism! Subsoiling is but another name for deep ploughing.

Mr. Wakeman.—Dr. in ploughing sod, which is the best method, to lay it over flat, or partly on the edge?

Dr. Underhill.—Turn it over flat, except in cold wet lands.

Judge Van Wyck.—Pulverizing the soil is the great object, so as to admit the roots of plants to extend their searches after their

proper food. Subsoiling breaks up a new earth, the English do not at first bring their subsoil up to the surface of the land.

Lands well ploughed and subsoiled have been found to produce fine crops without manure for a time. The interesting experiment tried at Rockheath, England, by Stracey, on 500 acres proved this. That farm had been condemned as worn out, some said, you may perhaps plant a forest on it. It had always been ploughed some five inches deep. Mr. Stracey let parts of it to cottagers, who dug two spits deep in it, and, without manure, got good crops the first year. When Stracy saw this, he had the farm ploughed and subsoiled eighteen inches deep, and without any manure he got twenty-six bushels of wheat per acre the first year. The next year he manured partly and got thirty-six bushels of wheat, of the weight of 64 pounds the bushel. In ploughing, straight furrows are important.

Mr. Meigs.—An Englishman some years since, bought a worn-out farm in New England, one so sterile that it would scarcely bear a mullen stalk. Buildings and fences long deserted and in ruins. He repaired the latter, and with a powerful team of cattle and a huge plough, he began in the spring to plough his barren purchase. He continued this ploughing, first one way and then across, all summer long, he then sowed wheat, and next year reaped thirty bushels per acre, without manure.

Judge Van Wyck.—Let the Ploughing and Subsoiling be continued. Adopted.

The Club adjourned.

H. MEIGS, *Secretary.*

February 1st, 1848.

Judge R. S. Livingston in the Chair.

Henry Meigs, Secretary.

Mr Wakeman. The most important subject now before the American Institute, is the Agricultural School and Experimental Farm, which we are petitioning our Legislature to enable us to establish. Such is the substantial character of the proposed system, that we rationally look for success. A bill calculated to commence it is be-

ing prepared in our Senate, it will there probably find favor, and such is the growth of opinion in this respect, that we believe the House of Assembly will concur with the Senate in giving to New York the first *practical establishment* of the kind in the United States. I call for the reading of the Resolutions recently adopted by the State Agricultural Society. They were read as follows, viz:

Resolved, That a complete and liberal system of agricultural education will enable the farmer to enhance the value of his landed property, and give him the knowledge to improve the same, and change the various modes of culture.

Resolved, That science applied to agriculture should hold a prominent place in all our seats of learning, and that a properly organized and well directed Agricultural School, embracing a model and experimental farm, would conduce to the elevation, and promotion of sound instruction among the industrial classes.

Resolved, That the time has arrived for the establishment of such a system of education and the object is every way worthy of private and legislative approval.

Mr. Wakeman. The advantage of the Experimental Farm in testing seeds and plants, and delivering to the public none but such as are authentic and warranted, would be very great. For it is in this branch of business that the greatest difficulty is found. When once established, the Farm would be looked to from all quarters for true plants and seeds. As is now the situation of this business not one in ten of the plants and seeds are fairly tested. They come by ship, thence to stores, thence to individuals, and many a disappointment awaits the unlucky buyer.

It is well for us to compare the vegetables on our modern tables with those of former times. I hold McCulloch in my hand—and he says that potatoes, turnips and clover were introduced into England as late as the 17th century. What a poor table of vegetables did they spread before that time! No potatoes, no turneps,no tomatoes, no rich English puddings, hominie, &c. In our experimental farm, how many plants of acclimation we might have! Of precious seedlings how stinted is now their distribution. I brought a delicious seed apple from Bergen here, but it is now hardly known to exist. Here in this great mart of commerce must be the concentration, and from hence the distribution throughout the land; pure seeds, plants and animals, of all things useful to agriculture.

Our school and farm will be fixed most firmly on that principal of strict economy so vital, to all great success. The steward of the school will be a man of the right stamp, under the eye of an *unpaid* and *independent* President. The young men will furnish their own bedding, and in the whole concern *not a dollar shall be expended for show.*

The charge for tuition will be very moderate, and still for a revenue sufficient. We have numerous applications from parents to know when we can receive their sons. There will be a multitude of applicants, more than the first establishment could receive.

Among other matters in the School and Farm, there will be workshops for making and mending all sorts of Agricultural implements and machines, that the scholars may become practically taught in this branch.

McCulloch states that in reference to ploughs, that the improved plough has over the old one, the great superiority of *one-third less draft.* What a saving of labor to a nation! That the best new threshing machines have the capacity to save five per cent. over old modes, thus saving to England over 16 millions of bushels of grain per annum.

Mowing machines and cultivators. What immense labor do they not save. Compare the old work of hoeing with the rapid work of the modern cultivator. As to new inventions, all of which appear at the Annual Fairs of the American Institute, the scholars will have the fullest opportunity to examine them all.

I wish to add from McCulloch, his remark on the ploughs, now or very lately used within five miles of London, viz: that it takes five horses to pull one of them instead of two.

Dr. Underhill had noticed an advertisement in a newspaper, of one Isaac Buchanan, who offers to prune grape vines on my plan, which he says is from 19th Jan. to March. Now I have repeatedly stated my practice, which is to prune my vines, Isabella and Catawba, in March and April. That their bleeding so far from being injurious, seems to insure a good crop of grapes. Pruning in February often kills the vines, the cold is too severe, it enters the sap and kills in part.

Oliver Smith cut off a bush from a tree in December, and the wound will never heal, probably it will rot away. But do the same thing in March and the wound will surely heal.

Dr. Underhill. I prune my orchards in February, but then I cover the large wounds with plaster. If I had time, I should prefer to prune them in March or April.

Mr. Pike. I wanted some grafting done, and a wagon with three men appeared at my place from Ohio. The principal agreed to graft for me at four dollars the hundred, and to call on me next July and be paid for all that should take. He put in two hundred grafts for me in an hour and a half. And in July called for his pay. Not five in a hundred had failed.

Columella. Turnips must be taken into consideration for they fill the bellies of the rustics, and are grown for oxen especially in winter. The turnip loves mild, sandy, gravelly land. Sow the seed last of August or beginning of September.

Pliny says that he had seen turnips weighing forty pounds each, and some others affirm that they had seen some still larger. Greeks called it gongalus from its round form.

Columella. Fodder of clover, betechs, green barley, lucerne, oats, peas.

Columella, speaking of Agricultural education, says that it is essentially necessary, "nothing (says he) equals my surprise when I consider that when those who desire to learn to speak well, select an orator whose eloquence may serve them as a model; while those who are anxious to learn, or to become good musicians, employ a dancing or music master, in short that every one looks for the best master in order to make the best progress under his instructions; the most important Science, *the next to that of wisdom*, has neither pupils nor teachers. I have seen schools established for teaching rhetoric, geometry, music, dancing, &c., but yet I have never seen a master to teach agriculture, nor a pupil to lean it.

Mr. Handcock. *The Russian Agricultural Exhibition in Moscow, in* 1847. There was an exhibition of all sorts of manufactures, giving to those connected with agriculture a pre-eminence, such as the raw materials exhibited in the first saloon, viz: flax, hemp, and wool, and among the latter were admirable samples from the Baltic, and from the Southern Provinces of the Empire. These articles merited the first rank in the exhibition on account of their great national importance.

Chairman. Our regular subject, Ploughing and Sub-soiling, is now in order.

Dr. Underhill. I must say we do not usually plough half deep enough for a crop. If I was to try to produce the greatest crop, I would plough the surface soil not deep, but thoroughly. I would mix the manure in it, and the soil itself, most perfectly; then I would plough as deep as the soil went, mix all thoroughly, let in the atmosphere among the pulverized parts, comparing this process to that of a baker, who mixes his yeast so perfectly with the flour that every particle gets some of it. In this way I would obtain a double crop nearly. In such a tillage all the roots find easy penetration and abundant food, and a drought, fatal to crops with little and but shallow plowing, would hardly be felt in this. I have seen comparatively poor farms treated in this way, and their crops were doubled the first year.

Mr. Pike. I am diametrically opposed to this where there is a sandy, loose subsoil; but in a hard one, I agree that Dr. Underhill's method would prove good. As to capillary attraction, of which he speaks, I think that moisture rises in the soil by means of the pressure of the atmosphere, and also the tendency of moisture to unite with dry bodies. The true philosophy of ploughing is to make the soil pliable. I want my furrows laid at an angle, not flat, for if it is, air can't get to it, and hardly water. Take off the pressure of the atmosphere, and the moisture or fluids, will not ascend.

Mr. Meigs. But the pressure of air is equal in all directions, so that it cannot cause the ascent or descent of fluids in the soil.

Dr. Underhill. The term capillary attraction, is used to denote the ascent of gravitation in fine tubes. Wherever fluids rise against gravity, we call it capillary attraction.

Oliver Smith. The idea of mixing air with soil *is all gammon!* The foliage of plants takes in the carbon from the atmosphere. Mr. Smith then explained the theory of capillary attraction, as evinced by his demonstration of the electricity in his recent published Essay, the Outlines of Nature.

Dr. Underhill. Carbon in solution in water, enters the roots of plants, as well as their foliage.

Chairman. Experiment fully establishes the fact, that carbonic acid is taken up by foliage.

Judge Van Wyck. Our regular subject is one of the most important in the great work of agriculture, and in reference to ploughing we must be governed by practice. The great object is to pulverize the earth, in order that roots may readily penetrate it, and that the plants, having free and full room for their roots, and greater range for food, may not only have a vigorous growth of stems and leaves, but perfect their seeds.

Perfect ploughing is of recent practice, as united with sub-soiling, introduced by a few gentlemen in England, who had remarked the great fertility of gardens which had been deeply dug. It is only some fifteen or twenty years ago. I have known farms in our country poorly ploughed and badly manured, generally run down in their produce, and sold out to those who ploughed and sub-soiled, or rather ploughed deep, from 10 to 14 inches, (according to the quality of the land,) and these new cultivators got *one-third more crop* with but little manure. Many sub-soils have valuable properties, which, when they (the sub-soils) are well pulverized and penetrated by air and moisture become available to the farmer. Such as lime, marl, &c., and the mineral manures generally, when put on or lying near the land, sink down into the sub-soil, and also a portion of the putrescent manues are carried down by rains, especially in light soils. The farmers who have bought those ill tilled lands, have reaped the benefit of the new and improved culture, by getting fine crops. Stock must be upon a farm to enrich it with their manure. A farm well stocked is always right. Stock is an unfailing source of manure. A farm where the surface soil, only four or five inches deep, has been stirred for years by the plough, becomes too poor for grass or grain, and of course cannot support much stock. It may answer in a sandy sub-soil to turn some of it up to the surface, but a stiff or clay sub-soil had better be well stirred, but not brought up to the surface in less than two years afterwards.

Oliver Smith. Soil should be thoroughly loosened, perhaps a foot in depth. Water runs down in heavy rains, but rises in hot, dry weather, and brings up with it elements necessary to vegetation.

Mr. Sherwood. I am of opinion that, (as a general thing,) subsoils which have been thoroughly stirred for two years, may then be, with great advantage, turned up to the surface. The great distance

which some roots of plants descend in porous soils, in search of water, is astonishing. The roots of wheat have been traced thirty feet, under such circumstances.

Dr. Field communicated the result of his observation and experience on the plough.

The following subjects were then adopted for the next meeting of the Club.

Draining, as connected with subsoil ploughing, and also irrigation.

The Club then adjourned.

H. MEIGS, *Secretary*

February 15, 1848.

R. L. Pell of Pellham in the Chair. Henry Meigs, Secretary.

Mr. Meigs read the following translation made by him from the O Auxiliador da Industria Nacional—Rio de Janeiro, 1846, remarking first that the original was in his opinion a just and elegant eulogium upon agriculture, and that his translation was as literal as it was in his power to make. That such testimony as this from a distant land, of the high importance of agriculture, always came most acceptably to us, as evidence of the universal sentiment of the most eminent and excellent men in favor of the great cause of agriculture.

O Auxiliador da Industria Nacional,

Rio de Janeiro, 1846.

What is agriculture?

The sublime art of cultivating the earth, and making it produce plants, grains and fruits suitable to and necessary for man. And at this day it also embraces the multiplication and preservation of cattle. It is the first and most useful of the arts. He who dedicates himself to agriculture is most in conformity with reason and nature.

In truth, what is there more natural and rational, than that by our industry, we should draw from the bosom of the earth our food and raiment? What can more enable a susceptible soul than gentle and

judicious meditation constantly upon the marvellous treasures of nature, beholding as we do, every where, such manifest proofs of the grandeur and goodness of God! In the midst of a numerous and industrious family, the farmer above all men, can enjoy serene and happy days. But sometimes ignorant of his own happiness, we see him envy the inhabitants of the cities, whose lives are usually but one series of agitation and of bitterness.

In civilized countries, agriculture is making an immense progress, the wealthy and wise (o rico e o sabia) no longer despise this first of the arts. Noble schools for teaching are already founded, in which the theory and practice of it are learned together. Scientific societies are occupied, ardently, in protecting its progress and in giving premiums for agricultural excellence.

Industry, the prime mover, the inexhaustible fountain of public riches, is the grand object of this society.

The discussions in our society,—all sensible men know the beneficial results of discussion, in the elucidation of questions, in moderating exaggerated opinions, in the correction of serious errors, and in the excitement to a solid study of subjects.

Mr. Wakeman said he was gratified to have it in his power, to inform the club that a new monthly Agricultural periodical has been issued by Mr. C. N. Bement, of Albany, a gentleman of intelligence, candor, accuracy, and with all a practical farmer and horticulturist. We like such editors, farmers will have confidence in their writings, as they will not mislead them. One of the great impediments to knowledge among farmers, has been the impracticable nonsense sent out by theorists, who, incapable of writing themselves, or of selecting, for want of experience, and when resorted to as a guide, the result has been disappointment and ridicule, ridicule that has destroyed the confidence of thousands in book knowledge! and arrested the progress of agricultural improvement. Mr. Bement's work is entitled American Journal of Agriculture and Science. The print is large, on good white paper, and the price but two dollars per annum.

Mr. Wakeman also laid on the table a pamphlet, The Republican Institute, issued by the Institute, founded by the late Stephen Van Rensselaer.

Mr. Wakeman remarked that we have on our table also, presented by those respectable publishers; S. S. & W. Wood of this city, Davis' Text Book of Agriculture, in which Mr. Davis in the introduction, recommends the teaching of that great practical art, in our common schools and colleges. That scholars go to their homes, and may there practice the lessons they have learned. So that the State in this way becomes one great experimental farm! Not so. We have not, as is well known, teachers in our schools and colleges, competent to that end. We are not yet prepared to begin to teach it effectually. And the want of intercourse among farmers generally, prevents all circulation of knowledge. The view given in the Scotch Agricultural Journals, of the condition of the common farmers there, is striking:

"He, more than the denizens of a town, is exposed to a species of *mental torpor*, the result of the monotony of his employment. From want of mental exercise, the whole nervous system becomes relaxed, and hence we find a *premature dotage* taking hold of the *Hind*, between his 50th and 60th years.' He becomes listless, stupid and *unimpressionable*. Life has ceased to have an interest for him, and he vegetates merely. Statistics show that the members of the learned professions, notwithstanding the sedentary life which they are compelled to lead, are as long lived as the rest of the community; and we know from many examples, that literary men in particular, not unfrequently carry into extreme old age all the freshness and buoyancy of youth! *So much for education.*

Mr. Downing of Astoria—in a note to Mr. Wakeman, states an experiment on the position of manures in the soil, tried by himself. One piece of ground he ploughed eight or nine inches deep, and then spread manure all along in the furrows as he ploughed. He ploughed an adjoining piece of ground on which he had first spread the manure, then harrowed it thoroughly in—both pieces of ground were otherwise worked alike, the former yielding full twenty per cent. more than the latter. The corn on the first piece did not at first appear to do as well as on the last, but in the end it increased and excelled the last. Mr. Downing thinks that the gases of manures will not descend, but do ascend.

The chairman now called up the regular subjects: draining and Irrigation.

Judge Van Wyck. Drainage is very little used in our country—but in some parts of Europe, owing to their humid climate, it is im-

portant. There are also here many places where the system of drainage is very useful, not only for the purpose of bringing lands which are useless into cultivation, but for another very valuable object, that of salubrity—for many of these moist or swampy lands generate dangerous fevers, or fever and ague at least. So that any plan for ridding the neighborhood of such a nuisance, is exceedingly worthy of our attention. England, has of necessity, become expert in drainage.

Very little is either done or known about the practice of irrigation among us. This, however, is far more essential for us than drainage; for we have many dry and sandy soils, and a hot sun to exhale the moisture. If we could cheaply water many of our fields, the result would be great. But almost any plan for irrigation would prove to be too expensive for us. The effects in some countries of irrigation are very fine. Even in the moist climate of Edinburgh, in Scotland, they have brought into high fertility sterile lands, by means of irrigation. Those lands formerly worth a rent of two pounds per acre, are brought to be worth a rent of thirty, and some forty pounds per acre, so rich have they been rendered by irrigation carrying on to them the city filth. The more impure the water, the better for the land. All surface water is fertilizing to soil. The irrigation should always be conducted so as not to suffer water to stand still on lands even for an hour, but to cause it to flow over in a moderate way. If a scum should form on the surface of the water, injury will be the result. These methods are well understood and practiced in Lombardy, in Italy, and there are many places in our country where it can be done with great benefit.

J. S. Skinner stated he could confidently aver that no man could relish more than him discussions of this sort, that he would always attend punctually, in the confident expectation of deriving benefit from the researches and experience of the members; but that unfortunately he could not hear one word that was said, and that time was too precious with him, and the more so as he grew older every day. He wished to be informed in time, what were the subjects to be discussed, and then he should be happy to prepare himself for them at the following meetings of the club, and would endeavor to throw light upon the subjects—such feeble light as he could, still under the mortification of not being able in the discussion to benefit by the correction of his own errors, which might be made by the more extensive knowledge of other members of this Club.

Mr. Pell, of Pellham. Drainage, one of the subjects selected for discussion at the present meeting of the Farmer's Club, is a subject of vast importance to the agriculturist, whose success in growing crops, entirely depends upon the removal of superfluous water from lands naturally tenacious, and retaining constant moisture, which in nine cases out of ten materially injures cereal crops, and not unfrequently renders vast tracts of land entirely useless for agricultural purposes, which in many instances might be reclaimed at a small expense comparatively speaking. Often two or three land springs destroy acres of valuable land, by rising over the surface, and descending through alternating stratas of clay, gravel or sand, until they reach a hard bottom, where they accumulate and form reservoirs, which ooze through the superincumbent surface, and keep it always wet. If there is a descent, this water may be readily got rid of by boring, by under drain, or open drain. If surrounded by high ground, select the lowest spring, and dig a well, the water will then follow the vein, and thus thoroughly drain the field. Should there be a sufficient descent, open or close drains may be made, conveying the water from the various springs to the lowest part of the field, where a pond may be formed for the purpose of watering cattle, supplying ice, or even fish! The earth excavated, if clay, will form a valuable manure for sandy land, and vice versa, if sand, will render porous and fit for cultivation a clay soil. It not unfrequently happens that water is retained near the surface of a field, by a clay strata of inconsiderable thickness, thus rendering the soil unfertile. This difficulty may be overcome at a small expense, by perforating the clay with a subsoil plow; the water will sink into the gravel or sandy soil beneath, and escape. In many fields you often find alternate portions wet, and dry; upon examination it will be found that the wet portions are clay, and the dry, sand or gravel. In this case your field may be reclaimed at once, by opening a drain from the wet to the dry land, which will immediately absorb the moisture. A drain should on no account be made directly down a rapid descent, lest its efficiency might be destroyed by the impetuosity of the stream, and consequent collection of water at the bottom, inducing an overflow, and occasioning injury to the adjoining field; let it descend the field diagonally, and the water will naturally percolate slowly without forming obstructions.

If the slope is gradual, by all means run your drains in a straight line, directly down it, in parallel lines, as it stands to reason where the situation admits of it, that a straight line carries the water more readily than a diagonal one. Main springs sometimes render a

field unfit for agricultural purposes. I have known fields that have been perfectly useless to their owners for years from this cause, which might have been remedied in a few hours, by simply opening the channel of the spring; lands that have been long immersed in water, may by proper drainage be made to yield very large crops of grass, or grain, for the reason that water constantly absorbs gaseous matters from the air, and carries them with it wherever it goes in solution; it is finally deposited by an arrangement of nature in the earth, and is constantly renewed by every succeeding overflow, until the land becomes rich in these impurities of the water, all of which are in a more or less degree indispensable to the growth of plants, being of organic origin, and containing not only decayed vegetable matter, but frequently animal. It is only necessary, therefore to get rid of the superfluous water by judicious drainage, and all these matters become at once capable of ministering nourishment to your cultivated plants; and land which in its undrained state was of no use to you, become of inestimable value. While saturated with water, it is impossible for the earth to obey the laws of nature, and radiate heat—as all bodies on the face of the earth should; all warm bodies throw out heat to cold bodies, as nature is forever striving for an equilibrium of heat. She is bountiful and yet provident in all her works; she ungrudgingly dispenses her favors to man, yet never wastes; her sun shines and throws light upon all alike; still science can assist nature, and proper drainage is calculated to benefit not only wet, but in many cases even dry soil may be benefited by drains, I once had a small piece of land which would yield me no return for my labor. I ran several drains through it, and ploughed it deep and thoroughly; the second year after it produced a heavy crop of grain. The conclusion I came to was, that the soil contained substances injurious to vegetation, which were rendered soluble by the rain water falling upon the ground, and carried off through the drains.

Undrained lands are called cold, and justly so, for the reason that they never derive proper benefit from the sun's rays; they give off incessantly a very large quantity of vapor, and with this vapor, nearly all heat may be contained. It is not necessary to take my word for this fact, as you may by the same experiment I tried, satisfy yourselves. In the summer at mid day place a thermometer in a dry field, and it will probably rise to 103°—then in a moist undrained field, it will fall perhaps below 80°. Such was the case in my experiment.

Immediately after the water is removed from the land, the air at once penetrates and possesses itself of all the vacant spaces; the consequence is that the roots of growing plants descend likewise, and find a virgin soil of great depth; accumulated by continued washing of the rain, perhaps for centuries. It will strike you as a material consequence, that the deeper you make your drains, the greater the depth of available soil will be afforded for the purpose of vegetable growth. Wheat and clover will extend their roots four feet in depth, if the soil will admit of it. Practical men in Europe have found that the effects of draining have increased the products of their farms sufficient to pay for the most expensive system of drainage, in three years.

There is a private gentleman in Great Britain, who has made over 350 miles of drains on a single farm of 1,000 acres of land. Before it was drained, he rented it for $2 per acre, and afterwards for $8. As soon as the land became dry, the agriculturist had an opportunity afforded him of displaying his exertions to advantage. Bones, ashes, nitrate of soda, lime, and other artificial manures, which on his wet soil exhibited no fertilizing virtue, now yield him adequate remuneration for all his labor and expenditure. The man who drains and improves a wet piece of bog land, should be looked upon by all his neighbors as a public benefactor; for the reason that mists, mildews, miasma, &c., arise from such land, and injure all the crops in its immediate vicinity; and not only that, but they do far greater injury to the surrounding population, by causing intermittent, bilious, typhus fever, fever and ague, &c. By drainage, then, the climate of the locality is entirely changed, in reference to the general health of the inhabitants, and the growth of plants. Dr. Wilson, in the English Quarterly Journal of Agriculture, vol. 12, page 317, has shown, that fever and ague, which formed nearly one half of all the diseases of the population during the former ten years, had almost wholly disappeared during the latter ten, in consequence of the general extension of an efficient drainage throughout that part of the country, (district of Kelso,) while, at the same time the fatality of disease, or the comparative number of deaths from every 100 cases of serious ailment, has diminished in the proportion of 4 to 2. Such beneficial results, though not immediately sought for by the practical farmer, yet are the inevitable results of his successful exertion. Apart therefore, from mere considerations of pecuniary profit, a desire to promote the general comfort and happiness of the entire inhabitants of a district, may fairly influence the possessor of land to forward this method of ameliorating the soil; while the whole people on the

other hand, of whatever class, ought gratefully to acknowledge the value of those improvements, which at once render their homes more salubrious, and their fields more fruitful. Drainage then, in the first place, changes the soil, improves the climate, and adds to the health of the surrounding people.

In the second place, it deepens the soil, dissipates the water, and cleanses the subsoil of unprofitable ingredients. All in their place renders the land capable of producing all the cerealia, by the free admission of atmospheric air.

Three years since, I made seven and a half miles of stone under drains, on a piece of bog land. The ditches were dug to the depth of three feet, and were three feet wide at the bottom. A wall was carefully laid on each side, twelve inches wide and twelve inches high, leaving a twelve inch opening, over which flat stones were placed, and the interstices filled up with small stones; the whole were then covered with dirt; shortly after, the field was ploughed, harrowed, and seeded with rye, clover and red top. The crop of rye was a fine one, grain weighed 60½ pounds to the bushel, and the grass made capital pasture after the rye was harvested. This land had never been cultivated before; and was always avoided by cattle, on account of the numerous quicksand holes contained in it. I brought all the drains to a point, and there formed a chain of two ponds, 800 feet in length and 14 feet deep; also a circular pond of less dimensions, connected with them. The muck taken from the ponds amply remunerated me for all the expense incurred; they are now stocked with European carp, pickerel, shad, and fish from the great lakes.

I would not have the gentlemen who hear me, understand, that to drain a piece of ground effectually, it is only necessary to construct a drain with a sufficient descent to carry off the water it contains, but that it is indispensable they should know the structure of the field's upper crust, its capacity of permitting water to course through it, the varieties of strata of which it is composed, its porosity, &c.

Some fields are not capable of allowing water to pass them at all, on account of oblique strata running through them, and forcing the water to the surface; such fields may be considered unfit for agricultural purposes, and any expense laid out upon them by the proprietor, for the purpose of draining, would be a dead loss. Before this system is commenced, I would advise the farmer to examine his soil,

and subsoil; find out of what materials they are composed, their depth, degrees of inclination from the horizontal, &c.

The subsoil is most generally entirely different from the surface soil; the surface may be composed of clay, and the subsoil of sand, or gravel, in which case deep subsoil plowing will answer all the purposes of a drain; most effectually breaking up the clay surface, and thus enabling the sand or gravel to absorb all the excessive moisture. I have heard farmers say they derived no benefit from draining, although in their estimation their drains were perfect, having been made at great cost, and of proper materials, with sufficient descent, &c. Upon examination I found they had not subsoiled their land, the consequence was, the clay subsoil being retentive, held the water in almost a stagnant state, which was absolutely poisonous to all vegetation above it. The only benefit the farmer derived from his drains was an improvement in the soil directly contiguous to them. Whereas, it is indispensably necessary that the whole field drained should be subsoiled as deep as possible, the hard pan must be broken up, when the water will readily find its way to the drain, and through it to the level sought by the cultivator; you must not, therefore, consider the work accomplished until your land is perfectly tilled, and the air admitted to all the pores recently filled with water. Most farmers not bearing this fact in mind, construct their drains so shallow, that it is impossible to subsoil; and consequently they have deprived themselves of all the advantages to be attained by its adoption, and their drains are comparatively speaking, almost useless; draining and deep ploughing go hand in hand together, and it is by combining their effects, and the greatest improvements to the soil is accomplished.

Irrigation is another subject before the club this morning for discussion; and although of vast importance, is not as necessary for us, in my estimation, as drainage; for the reason that our climate is blessed throughout the growing season with an abundance of water, except in a few isolated instances. It is the art of watering lands in an artificial manner by means of channels, with a view of increasing their productiveness. In eastern countries the heat of the climate is such, that without flooding, lands which now yield most abundantly would be completely sterile. The simile made use of by Isaiah to indicate desolation, is "a garden that hath no water." Cato, 150 years before the birth of our Saviour, requested the Italian agriculturists to "make water meadows if they had water." The principal rivers in northern Italy, the Tagliamento, Po, and Adige, are used for the

purpose of irrigation, and all the country contiguous to them from Turin to Venice, is capable of being overflowed; they find it necessary to irrigate, not only for grass, but for corn and vines. The waters of all these rivers belong to the states through which they pass, and no man can use them without paying the state a price regulated by the quantity of water required. Lands capable of being irrigated in northern Italy, rent nearly for one half more than lands which are not. In all the hot countries in Asia, and in all tropical climates irrigation is carried to a great extent as the most effectual mode of producing fertility. It has been a favorite system of agriculture in Hindostan, Arabia and Persia, as well as in the Empire of China. I noticed a statement made in the Journal of Commerce yesterday, by a gentleman who had resided many years, 1400 miles up the river Ganges in India, that millions of people had died of famine, rain not having fallen for six months, and that the British Government were now constructing a canal from the mountains in which the Ganges rise 700 miles in length, at a cost of $50,000,000, for the purpose of irrigation. I was shown land in the vicinity of Edinburgh, Scotland, belonging to Earl Moray, that had been irrigated by the street water from the city, and thus made superior to any other land in Great Britain, yielding six crops of grass in a single year, which is sold for the purpose of being fed to milch cows, for £29 sterling per acre, and has been sold as high, when grass was scarce, as £55 sterling per acre. Forty-two acres of poor sandy soil near the city was irrigated at an expense of £900, and in 1833, when I was there, rented for £19 per acre, about $84.36.

There are on Long Island, within a few miles of this city, large tracts of sandy soil, now worth perhaps $5 per acre, which I am confident might be made worth $150, by a proper and judicious mode of irrigation. Adjoining many of these lands, there are extensive ponds, which by the use of proper steam machinery might be made to irrigate them. The first expense in many instances, would be great, but the profits would be far greater. I would respectfully advise some of the Long Island millionaires to try the experiment on a small scale. It only requires the success of a single individual to induce every inhabitant to follow his example, and Long Island woold soon become the garden of New York.

In Switzerland, the mountain torrents as they descend in the fall, are conducted over the vallies, which are flooded, and in many instances remain so during the winter; one winter's flooding is consi-

dered of more value to the grass, than 29 loads of the best rotted stable manure.

Such being the case, how inconceivably valuable is the water which daily finds its way into the river, and thence into the ocean, from the great city of New-York, how effectual would be the improvement of our impoverished lands, if these valuable substances could find their way to them instead of the ocean. 'By what our city fathers call their improved plan of drainage, all the rich excrementitious matters now find their way to the ocean likewise. These substances, if they could be saved, would be worth countless millions to the agricultural interest of the State. I will venture to say, that more than one thousand tons of most valuable fertilizing matter, finds its way daily to the rivers from the city of New-York; sufficient to enrich 30,000 acres of the poorest land annually; in such a manner as to render it capable of producing 130 bushels of shelled corn to the acre; instead of its present yield 25 bushels. It would pay the Long Island and Jersey agriculturists, to construct at the mouth of the leading sewers, water tight chambers, to collect the enriched waters of the city, with which to irrigate their worn out and famished lands. These waters contain in solution, every known requisite for the growth of plants, they contain calcium, lime, carbonate of lime, sulphate of lime, nitrates, sulphates, phosphates, alumina, silica, magnesia, oxides, organic and inorganic substances. In fact, every matter requisite to agriculture, is contained in them, and they are beyond the shadow of a doubt of inestimable value for the purpose of irrigation.

If Earl Moray obtained, as I before stated, £55, or $244 per acre, in a single year, for his grass, grown on poor sandy soil, in the neighborhood of Edinburgh, merely by the use of street water, what is there to prevent the Long Island farmer from obtaining like results. Let me entreat you gentlemen to collect by subscription a few thousand dollars and try the experiment! You will then leave your heirs a valuable inheritance. Pursue your present mode of agriculture, and you will impoverish yourselves, and drive your children to the western wilds.

Mr. Meigs. Irrigation was once the source of the wealth and grandeur of Mesopotamia, of Babylon, and is yet of Egypt. In the former, there are now a few small towns on the Euphrates and Tigris, which by using the waters of those rivers as of old, present in vegetable glory the grandeur of Irun. A relative who has seen it, says that a hundred thousand Yankees would soon make the dry baked deserts of that region, blossom like the rose.

J. D. Williamson. I observed in Santa Martha, in South America, irrigation has been practiced more than a hundred years. They never apply any manure to such lands. The water let on for a short time, and not suffered to stand, fertilizes the soil abundantly. In Peru, they let water stand upon the field but a few minutes, where they have put in a thimble full of guano in small holes near the corn. By letting water stand a few days on land covered with cactus and sensitive plants, the land is cleared, for these plants all die and are plowed in.

Mr. Pike. A field adjoining my farm was a wretched swamp. The owner was a judicious man; he drained it completely, and had rich grasses on it. It did not cost him half a dollar a rod, or he never would have done it. This field afterwards went into other hands, and now the swamp is restored, and the rushes are growing finely.

The Chairman gave his own views of drainage and irrigation, which, as they are of some length, and highly interesting, we have deferred till next week.

Chairman. If that man would subsoil the land deeply, the water would doubtless then find its way to the drains.

Mr. Wakeman. I was appointed a committee to consult Col. Travers, of Paterson, on the subject of his premium for the best essay on the Linen Manufacture of our country. I rise to report progress, and that Col. Travers will make out a suitable prospectus of the proposed essay.

Mr. Wakeman called for the reading of the remarks of the Long Island Star, upon the Agricultural College and Experimental Farm, proposed to be established by the State and the Institute. They were read.

Chairman. Gentlemen, you have all often heard of cattle said to weigh some 4000 pounds: I wish to see an ox approaching this great weight, and as an inducement, I now offer, through the American Institute, a piece of plate worth sixty dollars, or, if preferred, sixty dollars in cash, as a premium to be given to the man who shall present at the twenty-first Fair of the Institute, a Steer or an Ox, weighing *three thousand five hundred pounds or more*, the weight to be determined by a committee of butchers.

Subjects for next meeting: Draining and Irrigation continued—and by the Chairman, the depth which the roots of the cereals penetrate the earth—and also the care of stock in the spring, especially lambing—and also by Mr. Wakeman, pruning.

The Club then adjourned.

H. MEIGS, *Secretary.*

March 8, 1848.

Jacob L. Van Winkle, of Bergen, New Jersey, in the Chair.

Henry Meigs Secretary.

Mr. Wakeman called for the reading of the Bill reported in the Senate of this State by the Hon. John T. Bush, chairman of the Agricultural Committee of the Senate, for the establishment of an Agricultural College or School and Experimental Farm, prayed for by the American Institute. The Bill was read. The principal provisions of it are—the establishment of a farm of not less than 200 acres, near this city, with proper buildings, professorships and other suitable offices, and then a grant of $5000 per annum for the year 1848 and 1849 from the State. This appropriation being constitutionally made for two years only at a time. The personal estate of the school not to exceed in value $50,000. Nor the income $15,000 per annum.

Chairman wished to hear the opinions of members of the Club as to this bill.

Mr. Wakeman. No doubt the $5000 per annum will be continued under the conditions required by the bill, if placed under good management and economically conducted,—but it is a small grant for so great a purpose. The difficulty is in the want of sufficient capital to commence with, We are to obtain the lands, the buildings, found the several professorships which must not be occupied by any less than the first talents of our country!

R. L. Pell of Pellham. It will require a great sum to begin the system,

Judge Van Wyck. And the professors must be first rate men.

J. S. Skinner, Editor of the Farmers's Library. In obedience to the invitation of the Club, I am here prepared to say something on the subject of draining lands—and I think that the subject prepared for discussion should be taken up first and that all the miscellaneous matter should then follow. I am so unfortunate as to my hearing, that I lose all the benefit of the remarks made by gentlemen.

Col. Skinner then read a paper prepared by him on the subject of drainage,—premising that his object was to point to the existing sources of knowledge on this subject which abound in the most full and pertect manner in the invaluable essays of Von Thaer and in Stephens' Book of the Farm—whose instructions he had transferred to his Farmers' Library.

Col. Skinner observed that all of any great value on the subject was comprised in some fifteen pages. Draining and irrigation have been practiced in all ages and countries, by East Indians and Peruvians, by ancient and modern. The object of draining is to dry the soil Irrigation to give it required moisture. Col. S. advised that draining or irrigation should never be attempted unless it was thoroughly done,—otherwise all the cost would be thrown away. He had as editor of the American Farmer nearly thirty years ago, thoroughly discussed these subjects. He had heard objections to Agricultural Books as visionary and impracticable. This was a great error. He expressed the opinion that this Club, the New York Agricultural Association, the State Agricultural Society, and all the friends of agriculture in the union, should combine in demanding from Congress some provisions for the diffusion of agricultural knowledge, among the rising generation, at an expense if needed somewhat relative to the expense of war. Let me here state the relative cost of governments in this respect.

Austria pays out of her revenues		33	per cent for war.
France	"	38	do.
Prussia	"	44	do.
Great Britain	"	74	do.
United States	"	80	do.

Col. Skinner said as to Stephen's Book of the Farm, the whole subject of draining illustrated by fifty engravings, was contained in about eighty pages.

In the conduct of the Farmers' Library by me the publishers Messrs. Greely & McElrath, instruct me to spare no necessary expense in rendering it as complete as possible, for those gentlemen do not aim at reaping any profit from its publication but desire only

that it may be profitable to our country. Von Thaer thinks, and so do I, that we should have as good scholars in agriculture as in arms, and that we could if we understood farming as we ought (as was said ata distinguished dinner given not long since by Sir Robert Peel,) have one hundred bushels of wheat from an acre, and bunches of black Hamburg grapes weighing each five pounds.

Christopher C. Pabor, of Harlem, presented a pumpkin, which he said was called *spice pumpkins*, now two years old and perfectly sound, so that on indention by the thumb nail it bled immediately. Mr Pabor said it was supposed to keep seven years. It must remain out of reach of frost perfectly undisturbed, and he now placed it in care of the Club, that they may test its durability. He also presented two fine cream pumpkins of his last years crop, that the seeds may be distributed. These pumpkins are of fine form and color, and had not been seen by the greater number of members.

The thanks of the Club were unanimously voted to Mr. Pabor for these presents.

James Knowlton, of Westchester, presented a basket of potatoes of his last crop, vide his communication.

Ossining, Westchester Co., March 4, 1848.

Dear Sir:—According to promise I write to give you a history of the potatoe called the early prolific, of which I spoke to you, and of which I now send you a specimen. This potatoe was first brought to this country from England by an Englishman whose name I have forgotten, but it came into my posession about 14 years ago, and was first planted by me in my garden. I found it to be so good, early, and prolific, that I planted what I had on hand in the field, and have since raised or cultivated it as my principal crop. You will see by the specimen, that they are a pure white outside and in, and of the kidned shape, dry and white when cooked, even when not half grown, and have never been afflicted with the rot. This potatoe is not so good for the table after mid-winter, owing to its great propensity to grow, and must be overhauled once or twice during the winter to keep off the sprouts. When planted they produce a strong and vigorous top and the potatoes in the hill are found in a heap or close together, and it will yield when properly cultivated 100 barrels per acre and perhaps more. I planted the last season about four acres in one field which was a wheat stubble and which has been under

the plough for 18 years, with alternate crops of potatoes and wheat. The product was about 100 barrels per acre. This potatoe is fit for the table about the first of July if properly cultivated. I cultivate this potatoe on the wheat stubble as follows. Early in the spring I take manure from the barn-yard and stables, made during winter, which is very coarse (as we use plenty of straw for bedding for horses and cattle,) and cover the ground with it and plough it in deep, as deep as an ordinary plough can be made to run. Deep ploughing helps to absorb the heavy rains and also to keep the plants fresh during a drought. I then harrow the ground smooth and plant not deep 2½ feet apart in hills each way. When they begin to break the ground in coming up it is best to put on plaster of Paris, which besides its fertilising power. will enable the man who should follow with a horse and plough to see the rows more plainly, it being essential to stir the ground thus early to prevent the top from spindling. This potatoe is the more valuable because, it being early it brings a better price in market, and enables the farmer to clear off the crop in time to sow wheat in good season.

I also prepare a field for a potatoe crop in the following manner, I take a pasture field on which the timothy and red clover has run out and suffer no cattle to run upon it until June, when in my land there will be a good crop of white clover in full bloom mixed with other fine grasses which I turn in with the plough very deep, I then let it lay in the sun till the proper time for sowing buckwheat then harrow smooth and sow the buckwheat upon the surface and cover it with the harrow. You will have a good crop of buckwheat and the ground will be in good condition for a crop of potatoes the following year and be in good condition afterwards for a good crop of wheat.

Plant and cultivate the potatoe upon this ground as upon the wheat stubble. My motive in calling your attention to this potatoe is, that we may through your influence, get an exchange of a good early variety or late or both of the potatoe from the south of France, as I know from experience that the potatoe carried from a warm to a cooler climate is of better quality and more prolific.

Yours Respectfully,
JAMES KNOWLTON.

The Chairman presented tomatoes; imported by Mr. Broas, in the Steamer Northerner, in 60 hours from Charleston, South Carolina. They were perfectly ripe.

Mr. Wakeman presented a paper on the gutta percha, which will be published next week.

This communication, was accompanied by fine specimens of the gutta percha manufactured into bands for machinery, book covers, membranous sheets for covering *grafts*, or other purposes, lines, mouldings, for buildings or furniture, &., &.

Mr. Wakeman. I have listened to Col. Skinner to-day, and regret to find fault with anything he says on the great subject of agriculture, but he says, "Appeal to Congress for aid! Sir! we have for several years appealed to Congress for such aid; we have called for the consideration of the long neglected advice of the greatest of men, Washington, to establish a national department for agriculture, and our appeal receives no answer! no notice!" The Legislature of our Empire State hears us with favoring ears! As to books on agriculture, they frequently contain errors. But is that a reason for not persevering in collecting and disseminating knowledge in the business, yes, *the Art of Agriculture!* Draining is to us quite a different affair from what it is in the moist countries of Europe or elsewhere! Here our hot sun dries the earth with great power, and we have great spaces of lands of every variety, so that we can select spots suited to our purposes. Herafter the arts of draining and irrigation may doubtless become more necessary to us.

Col. Skinner says we ought to decide questions which are discussed in the Club. We talked that matter over at the foundation of the Club, and with great unanimity concluded that our business was to collect facts, to hear reasons and opinions, but leave the decision to the sober judgment of the people. The Transactions of the Club are published by our State at some considerable cost, let the farmers read and decide. We talk what we think, as farmers ought to do, and when some of us fall into error, we have the benefit of being told so, by others who happen to know more on that point than we do, generally on the spot, or if not, at a future meeting or through the press. We have the evidence of public approbation of our "Club" from all quarters. Generally four reporters of our leading daily papers attend.

Mr. Meigs. We are busy in collecting evidence to be laid before the public, not in deciding for them.

Mr. Williamson. I am friendly to the Agricultural School proposed, but the Professors and other persons to be employed in its management, must be entirely unexceptionable.

Messrs. Greeley and McElrath communicated to the Club the following letter on the wheat of Texas, from J. O. Trueheart, Esq., of Galveston, viz:

Galveston, Jan. 4th, 1848.

Dear Sir: Knowing the interest you take in every thing concerning Western Texas, it affords me pleasure to be able to send with this communication a sample of wheat, the propuct of that region. It is perhaps, due to mention the circumstances connected with its production, to form a correct judgment of every thing important to be known concerning it.

This sample was raised on "sod land," or newly turned prairie, on the farm of Judge Thomas, lying near the three forks of the Trinity, in the county of Dallas.

The sod is so compact, as to render it impossible to put the seed in, in a farmer like manure; but even with this imperfect cultivation, it produced 35 bushels per acre, actual measure. While last in that region I saw many crops, some estimated as producing more, others less, than that of Judge Thomas', the grain in every case of the best quality, while it was a matter of astonishment to me, that with their imperfect preparation, any wheat could be made worth gathering. It however affords abundant proof that with suitable cultivation, and facilities for harvesting and cleaning, an ample return for labor and capital might be secured.

This region is also well suited for raising cotton, corn, oats, tobacco, flax and hemp, all of which I there saw growing, affording to the farmer an opportunity of having a mixed crop to fill up to advantage his whole time, and in some measure protect him and the country from the ill effects of depression in price, or failure of any one crop. The crops of wheat are entirely exempt from rust, fly, or "freezing out," so formidable in more northern latitudes.

Judge Thomas, (formerly a successful farmer in the State of Missouri,) informed me that the land in the county of Dallas, will raise a much larger average crop per acre, than the best land in the State

from which he emigrated; he also pointed out the important fact, that the straw was much stronger, and resisted wind and rain better than in more northern latitudes. My attention being called to this circumstance, I examined the straw, and observed that it had much less hollow, and was decidedly more woody than any I had ever seen in "the States." The country of which I speak, is situated above the lower iron, or mineral belt, and is itself a silex and lime region. It extends to the hills, is an average of 50 or 60 miles wide, and about 300 long, ranging N. E. and S. W., and expands to a great width as it approaches the upper Colorado, Gaudalupe, and San Antonio rivers, embracing the San Saba, Perdinales, Puesco, and other streams. I did not take my pen to heap encomiums on this most delightful region of Texas, (which is needless to you) but to afford to others, through you, that tangible evidence, that wheat of the best quality, in large quantities, can be raised in Texas. The grain itself will speak more directly to the understanding of men, than representations of any other kind. It is an argument addressed to the senses, can be seen, felt and tasted, and may perhaps move some to seek out the truth, who would otherwise look upon the representations concerning this country, as idle dreams, or the result of over excited imaginations.

I also send with this a parcel of the seed of the Bois d' Arc, or Osage Orange, now so much desired for raising hedges, and which abounds on the upper Trinity. Try it, or let some northern friend do so. If it succeeds as well as there is every reason to hope, it will not only prove a great blessing to this State, but perhaps to all North America. Our millions of prairie can at once be rendered subservient to the wants and necessities of man.

Having extended my communication much beyond what I intended, I will now cease to tax your patience, and remain your friend.

J. O. TRUEHART.

Judge Van Wyck. Our farmers understand that kind of draining which they usually want, but they call it ditching; a mode of carrying off surplus waters, much cheaper for most places than underdraining. Our farmers are, and they feel it too, perfectly independent. They have always been used to plenty, and not one of them in a hundred will hazard regular draining, as practiced in Europe. Some lands might undoubtedly be benefited by drainage on the most approved plan. Col. Skinner quoted the drainage of certain kinds in England, as costing but $12 per acre. The cost of drains in England that I have seen estimates of is considerably more than this. Sir

Robert Peel is draining his lands, and enabled to charge his tenants, without much damage to them, four per cent on the cost of the operation. But labor there is probably three or four times less costly than it is here. We have land of all sorts in plenty. But in Great Britain, I have observed, that draining is only recommended on a general scale in districts of country in which the population is dense, and in the vicinity of markets capable of buying all the crops of the drained lands at first rate prices. In such drained lands, in order to be profitable, every foot of soil must tell. Such is the dense population of most of Europe, so numerous are the mouths to be fed, on almost every square mile of its contracted surface, that every foot of ground must be put in requisition and made to produce to its utmost capacity, with very little regard to the cost of production. Every proprietor there, though, is pretty sure of being ultimately remunerated for his outlay, great as it may be, from the constant demand existing in his immediate neighborhood for his products. The system of farming in Europe will not be adopted to any extent in our country for many years yet to come, however correct and profitable it may be there. A few, who have the means, and as a matter of taste and fancy, may enter into it, and whom it would not ruin or even embarass, should they fail ultimately of being remunerated. Our farmers generally, must have something like a moral certainty of remuneration, before they will venture experiments upon a large and expensive scale, nor would it be prudent for them to do it. New systems will be adopted by them partially and gradually, and in a way that will not hazard their means or embarrass them to execute. As to matters of taste and fancy, it would be more imprudent for them to hazard much in these, as the prospect of any return from them is still more uncertain and remote. Any moderate improvement would be more likely to be adopted by them, which would give them more corn and grass to the acre. This would accord more with their means generally, and, we are inclined to think with their fancy and interest too.

Mr. Pell, of Pellham. At the last meeting of the Farmers' Club, I made a few remarks on the subject of draining, but fearing I might not have made myself understood, I would with permission, continue the subject for a few minutes. At the close of my remarks, I understood a member to say, that he had known a piece of land on the farm of a friend, which had been thoroughly drained, yet still

produced the well-known rush called cat tail, various weeds and obnoxious plants, and consequently in his estimation received no advantage from draining.

It must be borne in mind, that no system of drainage is, or can be complete, until the substratum, particularly if it is clay, is wholly and most thoroughly broken up; for the reason that when heavy rains fall upon lands, the water immediately percolates through the upper soil, and finds its level upon the second surface or clay formation, where it naturally becomes stagnant and remains until it again finds the surface by the action of heat, and evaporates into the atmosphere.

If the subsoil is pulverized by the action of a subsoil plow, there is no obstruction to the water which naturally seeks the level of the drain, and finds its way to the terminus desired by the cultivator. We all know that no land can yield a return when formed of compact clods; and such will be the character of all clay subsoils that are not well drained and completely pulverized. You have probably all seen fields, which in a wet spring have become totally unmanageable, and by plowing have been rendered perfectly compact, the heavy snow throughout the winter prevents the beneficial action of the frost; and the heavy rains in spring, finding the hard pan beneath, renders them far from subservient to the advancement of vegetable growth. Atmosperic air never circulates in such a soil, consequently the mechanical arrangement of nature is destroyed, and the hopes of the husbandman blighted.

There has never been any improvement in agriculture of more vital importance to the farmer in my opinion, than draining. It must take precedence over all other improvements, and be considered indispensable to fertility; there is scarcely a farm in the state of New York, which may not be improved by drains and subsoil plows, but let me advise you not on any consideration to subsoil a naturally wet piece of land without first draining it, or the effect will be an irretrievable and irreparable injury. For instance it is always customary to till such a soil during dry weather; by such tillage you render it pulverescent; all soils you are aware, contain within themselves contraction and expansion, what is the result? Rain falls upon them, unites the pulverized particles of earth, and forms a hard mass totally unfit for the germination of seed. Drain your lands effectually, subsoil them properly, and take my word for it, it will never be necessary to adopt the present erroneous system of summer

fallowing, for the purpose of invigorating and fertilizing them, pulverization is alone necessary, and can only be maintained by complete drainage.

I have seen farmers plow a clay soil when the water has followed the plow, and have observed that those fields so plowed have never yielded a one-third crop since. The farmer who cultivates such lands, has difficulties to contend with, I will admit, that are almost disheartening, such as roots, trees, rocks, stones, &c. When the farmer meets with these impediments, he must philosophise thus: these roots have for ages cast off their excrementitious matters, and thus rendered this soil fit for another family to inhabit; the trees have shed their leaves for centuries, and formed a fine black mould admirably adapted to corn, the rocks have by their debri formed a fine silicious sand, indispensable to the growth of cereal vegetation; and the stones will form drains by which I shall accomplish all the beneficial results necessary to increase fertility, and this soil, which now presents such a sickening appearance, will be clothed with verdure characteristic of a well cultivated district.

In many instances in our state, it will be necessary after the soil is drained, to pare off the surface before it will be fit to plow; I have performed this operation thus: In the month of August, in the midst of drought, a skilful plowman, with a pair of oxen, was ordered to plow the field shallow, north and south; then east and west, by which means the sods were cut into squares; they were then drawn off, and placed in a heap to decompose by the addition of caustic lime. This operation is soon accomplished. Charcoal was used to prevent the escape of gases. Thus you percieve all the valuable properties contained in the sods were preserved. The usual mode adopted by farmers is to burn the parings, by which means all the permanent sources of fertility are destroyed; and if there is iron or silica in the parings thus burnt, the alumina becomes chemically united to them, and forms insoluble substances, requiring perhaps years to decompose; besides dissipating many of the soluble matters that the land contained, and thus exhausting its permanent fertility.

I have observed farmers paring and burning dry land, yielding grass and grain, with a view of increasing its fertility. It is a ruinous system, and injures the productiveness of the lands for years, the ashes obtained by this process is very small in proportion to the land consumed, and nothing is added to the soil. In peat soils which

are mainly rendered infertile by a vast excess of vegetable substances, I would by all means practice burning, for the reason that an undue quantity of such matters is not suited to vegetable growth, and these will still remain sufficient for all the purposes of agriculture. If your fields that require draining are nearly flat, and you find it to your interest to make use of open drains, nature always points out to you during dry seasons, the natural descent, which may not be observed by the eye, unassisted by a water level. Examine in such cases your ditches, and you will invariably find the aquatic plants growing therein, such as water cress, brook lime, &c., pointing down the descent towards the lowest level. I have frequently observed this fact, with surprise.

On ground which is particularly flat, it will be necessary that you give your drains a descent of at least 4½ feet to the mile, otherwise they will not keep themselves free, and the only way to effect this object is to cut deep at the outlet. If the bottom of your drain consists of small stones, you must give it a descent of one foot in every 110 feet; if fine gravel, one foot in every 415; if coarse sand, one foot in every 610 feet; if mud and sand, one foot in 2001 feet; if soft clay, one foot in 4015 feet. There are in this State large tracts of clay soils, yielding a sparse growth of rushes, which in summer are cracked in every direction, and almost as hard as flint, and in the spring and fall, present the appearance of yellow soap. They have been manured in many instances without effect, and their owners have abandoned them—still I assure you these same lands are capable, by drainage, subsoil plowing and judicious use of lime, of being made amazingly fruitful and productive, any manure placed upon them will remain to ameliorate and render them friable, they will not feel the vicissitudes of a dry season, nor the ill effects of a wet one.

Ten years since, I built a drain 1000 feet long, of brick and stones in the following manner: A ditch was dug through a dry soil 2½ feet deep, of a triangular shape; bricks were placed on end at the bottom, forming a triangle; they were then covered with hydraulic cement; flat stones were used as a covering, a layer of pine shavings were strewn over the top to fill up the interstices, and the whole covered with earth. At its terminus, I sank a large hogshead with numerous holes bored in the bottom, which rested on gravel; my object was effected, and the drain has never required any repairs. I have also constructed a drain of brick by reversing the angle, standing the bricks on end at the bottom of the drain—likewise by

placing a flat stone at the bottom, laying the bricks on their sides, and covering with a third brick; also by forming a triangle at the top and bottom by means of four bricks. I have made an excellent drain by coupling two flat stones trianglewise, meeting at the top, and filled in with small stones: also by ploughing a deep furrow through the low parts of the field, a portion of the lower side of the sod is cut off, and the sod returned to the furrow, you then have about 4½ inches of an opening for the water to course through.

Drains may be made very cheap where stones are not to be obtained by laying three rails in the bottom of the trench; or by placing three hemlock boards on the flat on each side of the drain, and two boards resting on them and meeting at the top thus forming a sort of arch, capable of sustaining great weight. I have tried the cobble stone drain, which I made by filling up a well cleansed ditch to the depth of sixteen inches, with round stones, about the size of a man's fist after which they were covered with straw and filled in with dirt; the interstices soon became clogged with earth and thus disappointed my hopes.

In the British Farmers' Magazine, Vol. iii., page 289, you will find that steam engines of sixty to eighty horse power, are used to great advantage at Deeping Fen, near Spalding, for the purposes of draining. This fen contains 25,000 acres of land, which is most effectually drained by the two engines.

Littleport fen, near Ely, containing 28,000 acres, is drained by two engines of thirty and eighty horse power. The last engine in a trial of eight hours, by the use of 87 bushels of coal, 51,230 tons of water were raised. Thousands of acres of land, now valueless, in our state might be reclaimed by the use of small engines, at a trifling expense compared to their value for agricultural purposes.

IRRIGATION.

BY R. L. PELL, OF PELLHAM, ULSTER CO., N. Y.

Irrigation—this subject is again before the club for discussion; at the last meeting, two gentlemen were in dispute respecting this important matter. One said it mattered not how long the water remained on a field requiring irrigation; and the other, that it might be left too long. Some land will admit of a longer continuance of water than others, according to their porosity. The rule to be observed however, under all circumstances, is this; the very moment

fermentation commences, which is generally evinced by an ascent of scum from the bottom; the water must be immediately removed, or injury will accrue to the growing crop, and perhaps its entire destruction; I would infinitely prefer grass grown upon upland for the use of stock, to water meadow grass. I have an eleven acre field of upland meadow, which will fat an animal much sooner, than the rich low land meadows in its vicinity, plainly showing that low land meadow grass is not as nourishing as permanent upland; I find Mr. George Sinclair has determined this matter experimentally; "he obtained from rye grass, at the time of flowering, taken from a water meadow that had been fed to sheep till the end of April, of nutritive matter, 72 grains; and from the same weight of this grass, taken from a rich old pasture, which had been shut up for hay about the same time, 92 grains. From the same grass from the meadow, that had not been depastured in the spring, 100 grains. And from the same grass, from the pasture which had not been fed off, 120 grains. He also found that all the grasses in fact, where their growth is forced by the application of either liquid or solid manures, contain nutritive matter in diminished quantities. From four ounces of a very rankly luxuriant patch of rye grass, on which a large portion of cow dung had been deposited, he obtained of nutritive matter, 72 grains. From the same quantity of the same grass, growing on the soil which surrounded this luxuriant patch, he obtained 122 grains. And, in a second trial, the same species of grass on a soil *entirely* destitute of manure, afforded, of nutritive matter, 95 grains. On the same soil, excessively manured, the grass afforded only 50 grains. In these experiments, the plants were of the same age, and were examined at the same stage of their growth," (Hortus Gramini Volumensis, 384.) The soil of uplands usually produces a very sweet nourishing grass, far more fattening, in my estimation, than the rich luxuriant, low land meadows. In Switzerland, during the summer season, the milch animals, (cows and goats,) are invariably sent to the mountain pastures, which are frequently irrigated by snow water from the higher peaks, it passes rapidly over them, and consequently never has time to stagnate. The soil is found by the water charged with nitrogen, oxygen, carbonic acid and other gaseous matters, these are carried by its percolating properties, to the roots of grass, and each performs its separate avocation, governed by the laws of nature; the oxygen assists to decompose the vegetable matter in the soil; and the carbonic acid gas yields food to the plant. If this water remained on the soil for any length of time, what would be the effect? Why, the gaseous substances would go off with the evaporation, and be exhausted; such is not the case in Switzerland,

the water passes rapidly over the land, seizes new and nourishing gases constantly from the air, and yields them to the hungry leaves and roots of the plants, with which it comes in contact. Thus fully demonstrating the value of running water for the purposes of irrigation. If you are not satisfied that this is the case, permit the water to stagnate on a small portion of your finest irrigated field, where your sweetest and most luxuriant grass now abounds; and you will find in a short time it will all die, and give place to wild aquatic races to which such land soon becomes congenial Continued immersion of lands in water always produces chemical matters, unwholesome to the finer grasses, but highly beneficial to useless marsh plants, flags, and mosses.

I would recommend the farmer when he drains his lands, always, if practicable, to control his head waters, springs, &c., for the purpose of irrigating the same fields in cases of necessity. They may afford him invaluable manures. For example, if they are muddy, they contain solid matter, which in their course over the fields deposit layers of valuable enriching manure; it soon becomes soluble and fit food for plants. Such is the fertilizing effect produced annually to the lands bordering on the Nile and Ganges, by the overflow of those great rivers. Or they may contain in solution the liquid manures of the barn yard, as we all know to our sorrow, that in this country, it is the usual practice of our farmers, in ten cases out of twenty, to construct their barn yards in such a manner, as to enable the liquids to find their way to the nearest stream. They not unfrequently lead rivulets of water directly through their barn enclosures, for the purpose of watering stock, and in their exit, of course nearly all the valuable properties of the manure accompany them. What would be the value of such a discharge over the field? I answer, five crops of grass in a single season. I would rather have one hogshead of liquid manure from the horse stable, than ten loads of pure cow dung.

If the spring passes through lime formations, it becomes thoroughly impregnated with the carbonate, which it deposits in its course, and thus without expense to the proprietor, limes his land in a form most conducive to the requirements of vegetation, as no plant can make use of manure for nourishment, in any other than a soluble condition. Again, many springs contain muriate of magnesia, salt, gypsum, muriate of soda, silica and organic matters, all of which are indispensable to a healthy growth of plants. These facts are sufficient to show sagacious farmers the advantages to be derived from the free

use of water, holding in solution so many valuable foreign matters. Ask twenty farmers, if so many can be found in the State of New York, who are in the habit of irrigating their lands, how they account for the fertilizing effects of the water, and they will probably all give you a different reason. One will say it makes the land cool, another that it keeps the grass warm, another that it protects the roots from being cut by frost, another that the temperature of lands irrigated in winter, remains generally at 40°, which is favorable to the roots of grass, &c., &c. If such were the case, one species of water would suffice for the wants of all, and it would be equally valuable to the last who irrigated with it, as the first. This is not the case. The water as it passes, deposits its chemical ingredients, and soon becomes totally deteriorated. This fact was proved in England. A gentleman owning a farm upon a small river, used its waters for the purpose of irrigation, and derived immense benefit, being able to cut several crops of grass from ground only yielding one good crop before. A farmer residing on the same stream above him, determining to benefit himself by his example, formed water meadows and used the water before it reached the lower farm. The consequence was a depreciation of more than two-thirds in the yield of grass obtained by the latter. The well managed water meadows in England, yield on an average, three crops of grass in a season. Whereas, as I stated in the last meeting of the Club, Earl Moray, near Edinburgh, Scotland, obtained six crops of grass, worth $244 per acre, by the use of street water. It is unsafe to irrigate any land which has not descent sufficient to permit the water to run freely off, or is not porous enough to admit of rapid drainage. If for example, your land consists of a level tenacious clay, by irrigation you injure it materially, ly, make it cold, and render it unfit for cultivated crops. Such lands should be under drained, subsoil-ploughed, and then if possible, irrigated. The desire of the cultivator is, that his lands may become dry very soon after the water is drawn off, in order that the atmospheric air may enter the earth and perform its all-important duties. It after all exerts all the most useful and extensive influence upon vegetation; the more therefore the agriculturist stirs the ground about his crops, the more he will be benefited by their increased luxuriance.

INDEX.

ADDRESSES:

J. H. Griscom, on the sanitary condition of the laboring population of New-York, ... 393
Communication from John A. Swett, M. D., on the subject,. .. 411
" " Stephen Wood, M. D., " " 413
" " B. W. McCready, M. D., " " 415
Statistics connected with the subject, ... 419
Communication from Rev. George Hatt, ... 424
" " J. B. Horton, ... 426
" " Samuel Russell, ... 431
" " John H. Bulen, ... 433
" " Isaac Orchard, ... 436
Hon. Nathaniel Burchard, ... 467
Hon. Mahlon Dickinson, opening address, ... 488
William Wallace, esq., ... 499
George Gifford, esq. 514
Fletcher Webster, esq., anniversary, ... 532
H. C. Westervelt, esq., ... 553
Gen. James Tallmadge, closing address, ... 563
Agriculture, instruction in practical and scientific, ... 332
" its importance as a science, ... 610, 616
" report of board of, ... 36

AGRICULTURAL AND HORTICULTURAL DEPARTMENT:

Thorough bred, &c., horses, ... 65
Mules, full bred stock, ... 66
Native grade stock, oxen, cattle and sheep, ... 67

Swine, poultry,. 68
Shepherd dogs, agricultural productions, ... 69
Flour and meal, hops, products of the dairy, ... 70
Native wine, fruit, ... 71
Flowers, ... 73
Vegetables, ... 74
Implements, ... 77, 78
American Institute, officers of, ... 3
" " 6th annual report of,..... 7
" " receipts and expenditures of, ... 8, 12
Annual fair, report of board of managers of,..... 23
" " premiums awarded at, ... 25
" circular relative to,..... 29
" extra premiums to be awarded at,..... 34, 35
" list of premiums awarded, ... 65
Ancram, Mr., on sheep, ... 250
Ayrault, Hon. Allen, twin steers, ... 311
Angus, James, culture of the potato,..... 325
Armstrong, S. T., Gutta Percha, ... 242
Burchard, Hon. Nathan, address, ... 467
Brown, D. J., on construction of farm cottages, ... 315
Blakeslee, Joseph, mode of keeping sheep, ... 144

COMMUNICATIONS :

R. L. Pell, on care of stock,..... 151
Samuel Walker on American and European fruits,..... 157
James Tallmadge, as to the Bloomingdale Asylum,..... 163
Alanson Nash, on culture of wheat,..... 166
Curtis Coe, transparent seedling cherry,..... 169
China grass cloth,..... 170
Lewis Sanders, on hemp,..... 175
Alexander Walsh, Rocky Mountain flax,..... 178
Spaying cows, translation by Hugh H. Bowne, ... 180
Prattsville Tannery,..... 182
Josiah Dutcher, his prairie plough, ... 199
E. Meriam, on American and foreign salt, ... 203
John Clowes, a visit to Le Roy's lead pipe factory, ... 213
William Serrell, new system of architecture,..... 216
Joseph Dixon, improved manufacture of iron,..... 222

John Clowes, on explosions of steam boilers,..... 228
M. E. Thompson, street paving, ... 234
Charles Henry Hall, roads and streets,..... 238
S. T. Armstrong, Gutta Percha, ... 242
S. W. Jewett's merino sheep, ... 246
Mr. Ancram, merino sheep,..... 250
" on the kind of sheep that are the most profitable, &c., ... 256
J. Dutcher, improvements on the plow,..... 265
Junius Smith, esq., on the cultivation of the tea plant in the United States,..... 271
" tea statistics,..... 310
Hon. Allen Ayrault's twin steers,..... 311
D. J. Browne, on construction of farm cottages,..... 315
James Angers, on culture of the potatoe,..... 325
Coe, Curtis, on seedling cherry, ... 169
Clowes, John, visit to Le Roy's lead pipe factory, ... 213
" explosion of steam boilers, ... 228
Coons, M. P., plan of farming,..... 147
Cows, spaying,..... 180

CONVENTION, NATIONAL, OF FARMERS, GARDENERS, AND SILK CULTURISTS:

Proceedings of,..... 329
Representatives in, ... 334
Questions for discussion in,..... 341
Committees appointed in, ... 347
Communication through Mr. Van Epps relative to silk, ... 351
Dickerson, Hon. Mahlon, opening address,..... 488
Dutcher, J., improvements on the plow,..... 265
" his prairie plow, ... 199
Dixon, Joseph, improved manufacture of iron,..... 222
Dairy, ... 59, 618, 619, 633, 639, 650
Expenditures and receipts of Institute,..... 8, 12
Extra premiums awarded by Institute,..... 65
Exchanges, international,..... 337, 340
" rates of, different years,..... 572
Exhibitors, extracts from statements of,.. 137, 138, 141, 142, 144, 145, 146, 147

Elliott's, Obadiah, south down sheep, ... 145
Engines, machinery, &c.,.... 117, 120, 122, 130, 131, 132, 133, 134, 135
Fair, report of, ... 23
Fruits, American and European communication on,..... 157
Farm cottages, on construction of,..... 315
Farmers Club,..... 579
Forests, destruction of,..... 665, 669
Flax,..... 672, 674, 718
Flour and meal, ... 60
Farms, report on, ... 113, 114
The plough and ploughing, ... 637, 662, 761
Queens county agricultural society,..... 638
Elator Noctilucus, ... 639
Sheep,..... 644, 652, 653, 654, 655, 656, 733
Corn, statement as to greatest quantity grown,..... 648
Agricultural facts,..... 951
Onions,..... 657, 659, 661
Wool, ... 664, 670
Forests, destruction and reproduction of, ... 665, 669
Long Island,..... 669, 674, 678
Poultry, ... 670
Flax,..... 672, 674, 718
Boston navy yard, ... 672
Silk,..... 676, 677, 727, 754
Grasses,..... 705
Forests, removal of, &c.,..... 717
Hemp, ... 719
Melons, ... 719
The potatoe,..... 720, 726
Horses of France, ... 726
Agricultural chemistry, ... 730
Manures, ... 737, 748, 759
The soil, ... 742
Unbraning wheat, &c.,..... 746
Yellows in the peach, &c.,..... 747
Trenching with the spade, ... 753

FARMERS' CLUB:
Strychnine, alcaloides, ... 579
Grafts of fruit trees,..... 580, 589, 668
Repository of arts, Connecticut,..... 581
Seedling apples,..... 581, 590
Cheap oil, ... 582
Agricultural schools,..... 581, 582, 605, 707, 737
Planting, &c., potatoes,.. 583, 587, 588, 591, 595, 600, 609, 610, 611, 612, 613, 623, 630, 632, 637, 638, 657, 675, 716
Indian corn,..... 585, 657, 723
Yucca filamentosa, ... 587
Bolmar plum,..... 588
Planting trees,..... 590, 736
To preserve corn meal sweet,..... 592, 596
Apple quince, ... 593
Osier willow,..... 593
Grape vine,..... 594, 596, 597, 645
Mexican squash,..... 596
Prangos pabularia, ... 598
West India squash,..... 599, 732
Peach worm,..... 599
Native grape vine, ... 605
Turnip peculiar, ... 608
Royal Horticultural Society, ... 910
Ashes as a manure, ... 611
Seeds, &c., presented, 613, 614, 617, 623, 627, 724, 725, 755, 762
" distributed, ... 608, 623, 759
Cowslips, flowering of,..... 614
Hovey's seedling strawberry, ... 615
Corn cobs,, ... 617, 619, 658
Dairy cows,..... 618, 619
Potato disease,..... 623, 624, 625, 627, 716, 735
Marl, ... 627
Georgia wine, ... 628
Dairy husbandry,..... 629, 633, 639, 650
Millet,..... 633
Michigan, soil, climate, &c., ... 633
Griscom J. H., M. D., Address,..... 393

Gifford George, Esq., Address,..... 514
Grass cloth, China,..... 170
Grasses,..... 705
Grapes,..... 62, 594, 596, 597 645
Grafts,..... 580, 589, 668
Gutta Percha,..... 242, 757
Hall, Cha's Henry, roads and streets,..... 238
Hemp, ... 90, 175, 719
Horses, ... 726, 768
Holberts John, method of making butter,..... 142
Hydraulic ram, ... 134
Horticultural report,..... 47
Flowers,..... 52
Fruits, ... 54
Vegetables, ... 56
Agricultural productions,..... 58
Dairy " 59
Flour and meal, ... 60
Hops, wine,..... 61
Grapes, ... 62
Implements, ... 77, 78
Improvements on the plough,..... 265
Institute Smithsonian, outlines of a plan for,..... 382
Institute, officers of, ... 3
International Exchanges, communications relative to,..... 337
Report of Committee on,..... 340
Industrial protection, ... 365
Iron, improved manufacture of,..... 222
Jewett's S. W., Merino sheep,..... 246
Lewis Jas., method of making butter, ... 141
Long Island, excursion to; 669 674, 678

MANUFACTURING AND MECHANICAL DEPARTMENT:

Baths, church bells, bonnets,..... 78
Boots and shoes, books,..... 79
Brushes and door mats, cabinet ware,..... 80
Cakes and confectionary, ... 81
Carpeting and oil cloths, carriages, clocks, &c., ... 82
Clothing, cooperage, cotton goods,..... 83

Dentistry, dies, drugs, &c., ... 84
Edge tools, cutlery, &c., ... 86
Engraving and daguerreotypes, ... 87
Fire arms, works, frames, furs, ... 89
Glass, grates, hats, &c., hemp, &c., ... 90
Japaning, lamps, &c., leather, ... 91
Locks, door springs and hinges, ... 92
Machinery and models, ... 93
Mathematical and musical instruments, ... 100
Naval architecture, needles, needlework, ... 101
Paper hanging, penmanship, pens, pianos, ... 105
Regatta, Russ pavement, saddlery, sign painting, ... 106
Silk, ... 107
Silverware, turning, wigs, wool, ... 108
Woolen goods, ... 109
Miscellaneous, ... 110, 111
Meriam E., on American and foreign salt, ... 203
Mulford's John M., method of keeping cows and making butter, 137
Mills David S., method of cultivating farm for dairy, ... 138
Michigan, soil &c., ... 633
Marl, ... 627
Millet, ... 633
Melons, ... 719
Manures, ... 737, 748, 757
Machinery, &c., ... 117, 135
Nash Alanson, culture of wheat, ... 166
Osier Willow, ... 593
Onions, ... 657, 659, 661
Prattsville tannery, ... 182
Prairie Plough, Dutcher's, ... 199
Premiums, statements of awarded since 1835, ... 112
Pell R. L., on care of stock, ... 151
Irrigation, ... 803

Reports on Farms:
Farm of Mr. Bell, ... 113
Messrs. Cooper, ... 115

Report on Engines, Machinery, &c.
Steam engines, models, and machinery, extract from, ... 117

Railroad wheels, and tracks, ... 120
Blooming forges and iron, ... 122
Drying apparatus for grain &c., ... 130
Ship pump, cotton compressing machine, ... 131
Hot air furnaces, window shutters, steam gage, ... 132
Tilt hammer, ... 133
Hydraulic ram, boring and morticing, ... 134
Iron bridges, mowing, ... 135
Report on international exchanges, ... 337, 340
Potato disease and supposed causes, ... 356
Industrial protection, ... 365
Repository of arts, Connecticut, ... 581
Randall J. L., on keeping Merino sheep, ... 145
Sheep, ... 246, 250, 256, 644, 652-56, 733

STATEMENTS OF EXHIBITORS, EXTRACTS FROM:

John M. Mulford's method of keeping cows and making butter, 137
David S. Mills' method of cultivating farm for dairy, ... 138
James Lewis' method of making butter, ... 141
John Holbert's " " " &c., ... 142
Martin L. Thompson's method of keeping cows and making butter, ... 144
Joseph Blakeslee's mode of keeping sheep, ... 144
J. L. Randall on keeping Merino sheep, ... 145
Obadiah Elliott's South Down sheep, ... 145
Cornelius T. Smith's mode of raising corn, ... 146
M. P. Coon's plan of fencing, ... 147
Sanders Lewis, on hemp, ... 175
Silk, ... 676, 677, 729, 754
Serrell Wm. A., new system of architecture, ... 216
Smith Junius, Esq., on cultivation of the tea plant, ... 271
Smithsonian Institute, outlines of a plan for a, ... 382
Table showing rates of exchange and premium on coin, ... 572
Imports of breadstuffs into Gt. Britain, ... 574
Tallmadge Gen. Jas., address, ... 563
as to Bloomingdale Asylum, ... 163
Thompson M. E., street paving, ... 234
Thompson Martin L., mode of keeping cows and making butter, ... 144

Tea plant, culture of,..... 271
Wallace Wm., Esq., address,..... 499
Webster Fletcher, Esq., address,..... 532
Westervelt, H. C., address,..... 553
Walker Sam'l, on American and European fruits, ... 157
Walsh Alexander, on Rocky Mountain flax, ... 178
Wool, ... 664, 670
Wine, Georgia,..... 628

